

Cedric Hodgson

Educational Psychology
Theory and Practice

Educational Psychology: Theory and Practice

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Edited by
Cedric Hodgson

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Preface

Education is a fundamental right of a person. It enables him or her to succeed in life. It is a process of gaining knowledge, beliefs, skills, values, etc. through the methods like storytelling, research, training, learning, discussing and teaching. Through this book, we attempt to address topics like the importance, need and result of education. It is designed to provide the readers a thorough understanding of the different topics related to education. Such selected concepts that redefine this subject have been presented in this text. Different approaches, evaluations and methodologies on education have been included in it. It aims to serve as a resource guide for students and experts alike and contribute to the growth of the discipline.

To facilitate a deeper understanding of the contents of this book a short introduction of every chapter is written below:

Chapter 1- The process of learning is biologically programmed in all living beings but it is human beings that have developed a system that teaches certain subjects and skill-sets. Education is an ever expanding sector that geared toward promoting learning and the imbibing of life skills. This chapter serves as an introduction to education. The chapter strategically encompasses and incorporates the major components and key concepts of education, providing a complete understanding.

Chapter 2- Education can be categorized based on the level of skill and information imparted and also the physical location where it is attained. Early childhood education is a combination of observational learning by the child and the learning that is fostered in play-schools and kindergarten schools. This chapter links the various stages of a child's life to the education received by exploring early childhood education, primary education, secondary education and higher education. A section also talks about informal education and inclusion.

Chapter 3- Teaching methods are always improving with focus on enhancing learning, breaking monotony and introducing creativity in the learning process. This content touches upon methods such as storytelling, training, co-teaching and research. The topic of factory model school is included in this section to illustrate the direct teaching method. This chapter elucidates the crucial theories and principles of education.

Chapter 4- Education theory focuses on the building of policies and practices centering on education while also seeking to analyze and comprehend them. The sociology of education on the other hand studies how public establishments and individual perceptions affect education. This chapter outlines education theory, psychology of education, philosophy of education, educational psychology, sociology of education and constructivism in the philosophy of education.

Chapter 5- The study of teaching and its methods as well as the theory of education and its practice is called pedagogy. The content scrutinizes a pedagogical movement called progressive education which focused on a multifaceted approach that uses experience as the fulcrum around which education revolves. The chapter additionally includes two branches of pedagogy that concentrate on adult and older adult education- andragogy and geragogy.

Chapter 6- The entirety of the educational experiences in a student's life is known as curriculum. Curriculum could vary from highly organized and sequential to autonomous depending on the region, age of learner and other factors. Curriculum studies delve into understanding how curriculum actively shapes a person's educational experience. Further this chapter reviews the different school organizational models. The topics discussed in the chapter are of great importance to broaden the existing knowledge on education.

Chapter 7- Educational specializations build definitive skill-sets in various fields like agriculture, visual arts, physical education and legal studies. This approach helps hone and nurture innate talent besides developing interest and prompting students to decide on professional careers. This content seeks to deepen the understanding of educational specializations in these fields.

Chapter 8- The job market is inundated with applicants seeking various positions based on their educational qualifications. Educational qualifications help companies and employers sift through applicants and choose the ones that best match the required profile. This chapter lists varied educational qualifications such as diploma, bachelor's degree, master's degree, doctorate and school leaving qualification.

Chapter 9- Right to education has been declared a universal human right and is to be provided free at primary and secondary levels if possible. It enables a person the right to free and compulsory education at the primary level as well as the right to seek secondary education, if he/she chooses as such. It also seeks to dismantle discrimination of all kinds in the educational sphere. This chapter discusses the methods of education in a critical manner providing key analysis to the subject matter.

Finally, I would like to thank the entire team involved since the inception of this book for their valuable time and contribution. This book would not have been possible without their efforts. I would also like to thank my friends and family for their constant support.

Editor

Introduction to Education

The process of learning is biologically programmed in all living beings but it is human beings that have developed a system that teaches certain subjects and skill-sets. Education is an ever expanding sector that geared toward promoting learning and the imbibing of life skills. This chapter serves as an introduction to education. The chapter strategically encompasses and incorporates the major components and key concepts of education, providing a complete understanding.



Lecture at the Faculty of Biomedical Engineering, CTU, in Prague

Student participants in the FIRST Robotics Competition, Washington, D.C.

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Educational methods include storytelling, discussion, teaching, training, and directed research. Education frequently takes place under the guidance of educators, but learners may also educate themselves. Education can take place in formal or informal settings and any experience that has a formative effect on the way one thinks, feels, or acts may be considered educational. The methodology of teaching is called pedagogy.

Education is one of the ten function systems of modern societies. It is commonly divided formally into such stages as preschool or kindergarten, primary school, secondary school and then college, university, or apprenticeship.

A right to education has been recognized by some governments, including at the global level: Article 13 of the United Nations' 1966 International Covenant on Economic, Social and Cultural Rights recognizes a universal right to education. In most regions education is compulsory up to a certain age.

Etymology

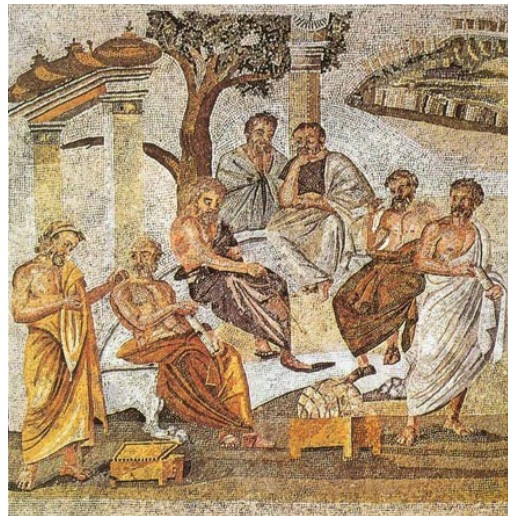
Etymologically, the word “education” is derived from the Latin *ēducātiō* (“A breeding, a bringing

up, a rearing”) from *ēdūcō* (“I educate, I train”) which is related to the homonym *ēdūcō* (“I lead forth, I take out; I raise up, I erect”) from *ē-* (“from, out of”) and *dūcō* (“I lead, I conduct”).

History



Nalanda, ancient center for higher learning



Plato's academy, mosaic from Pompeii

Education began in prehistory, as adults trained the young in the knowledge and skills deemed necessary in their society. In pre-literate societies this was achieved orally and through imitation. Story-telling passed knowledge, values, and skills from one generation to the next. As cultures began to extend their knowledge beyond skills that could be readily learned through imitation, formal education developed. Schools existed in Egypt at the time of the Middle Kingdom.

Plato founded the Academy in Athens, the first institution of higher learning in Europe. The city of Alexandria in Egypt, established in 330 BCE, became the successor to Athens as the intellectual cradle of Ancient Greece. There, the great Library of Alexandria was built in the 3rd century BCE. European civilizations suffered a collapse of literacy and organization following the fall of Rome in AD 476.

In China, Confucius (551-479 BCE), of the State of Lu, was the country's most influential ancient philosopher, whose educational outlook continues to influence the societies of China and neighbors like Korea, Japan and Vietnam. Confucius gathered disciples and searched in vain for a ruler

who would adopt his ideals for good governance, but his Analects were written down by followers and have continued to influence education in East Asia into the modern era.



Matteo Ricci (left) and Xu Guangqi (right) in the Chinese edition of *Euclid's Elements* published in 1607

After the Fall of Rome, the Catholic Church became the sole preserver of literate scholarship in Western Europe. The church established cathedral schools in the Early Middle Ages as centers of advanced education. Some of these establishments ultimately evolved into medieval universities and forebears of many of Europe's modern universities. During the High Middle Ages, Chartres Cathedral operated the famous and influential Chartres Cathedral School. The medieval universities of Western Christendom were well-integrated across all of Western Europe, encouraged freedom of inquiry, and produced a great variety of fine scholars and natural philosophers, including Thomas Aquinas of the University of Naples, Robert Grosseteste of the University of Oxford, an early expositor of a systematic method of scientific experimentation, and Saint Albert the Great, a pioneer of biological field research. Founded in 1088, the University of Bologna is considered the first, and the oldest continually operating university.

Elsewhere during the Middle Ages, Islamic science and mathematics flourished under the Islamic caliphate which was established across the Middle East, extending from the Iberian Peninsula in the west to the Indus in the east and to the Almoravid Dynasty and Mali Empire in the south.

The Renaissance in Europe ushered in a new age of scientific and intellectual inquiry and appreciation of ancient Greek and Roman civilizations. Around 1450, Johannes Gutenberg developed a printing press, which allowed works of literature to spread more quickly. The European Age of Empires saw European ideas of education in philosophy, religion, arts and sciences spread out across the globe. Missionaries and scholars also brought back new ideas from other civilisations — as with the Jesuit China missions who played a significant role in the transmission of knowledge, science, and culture between China and Europe, translating works from Europe like *Euclid's Elements* for Chinese scholars and the thoughts of Confucius for European audiences. The Enlightenment saw the emergence of a more secular educational outlook in Europe.

In most countries today, full-time education, whether at school or otherwise, is compulsory for

all children up to a certain age. Due to this the proliferation of compulsory education, combined with population growth, UNESCO has calculated that in the next 30 years more people will receive formal education than in all of human history thus far.

Formal Education

Formal education occurs in a structured environment whose explicit purpose is teaching students. Usually, formal education takes place in a school environment with classrooms of multiple students learning together with a trained, certified teacher of the subject. Most school systems are designed around a set of values or ideals that govern all educational choices in that system. Such choices include curriculum, organizational models, design of the physical learning spaces (e.g. classrooms), student-teacher interactions, methods of assessment, class size, educational activities, and more.

Preschool



Young children in a kindergarten in Japan

Preschools provide education from ages approximately three to seven, depending on the country, when children enter primary education. These are also known as nursery schools and as kindergarten, except in the US, where kindergarten is a term used for primary education. Kindergarten “provide[s] a child-centered, preschool curriculum for three- to seven-year-old children that aim[s] at unfolding the child’s physical, intellectual, and moral nature with balanced emphasis on each of them.”

Primary



Primary school students with their teacher, Colombia, 2014

Primary (or elementary) education consists of the first five to seven years of formal, structured education. In general, primary education consists of six to eight years of schooling starting at the age of five or six, although this varies between, and sometimes within, countries. Globally, around 89% of children aged six to twelve are enrolled in primary education, and this proportion is rising. Under the Education For All programs driven by UNESCO, most countries have committed to achieving universal enrollment in primary education by 2015, and in many countries, it is compulsory. The division between primary and secondary education is somewhat arbitrary, but it generally occurs at about eleven or twelve years of age. Some education systems have separate middle schools, with the transition to the final stage of secondary education taking place at around the age of fourteen. Schools that provide primary education, are mostly referred to as *primary schools* or *elementary schools*. Primary schools are often subdivided into infant schools and junior school.

In India, for example, compulsory education spans over twelve years, with eight years of elementary education, five years of primary schooling and three years of upper primary schooling. Various states in the republic of India provide 12 years of compulsory school education based on a national curriculum framework designed by the National Council of Educational Research and Training.

Secondary



Students working with a teacher at Albany Senior High School, New Zealand



Chilean high school students during a class photograph, 2002

In most contemporary educational systems of the world, secondary education comprises the formal education that occurs during adolescence. It is characterized by transition from the typically compulsory, comprehensive primary education for minors, to the optional, selective tertiary,

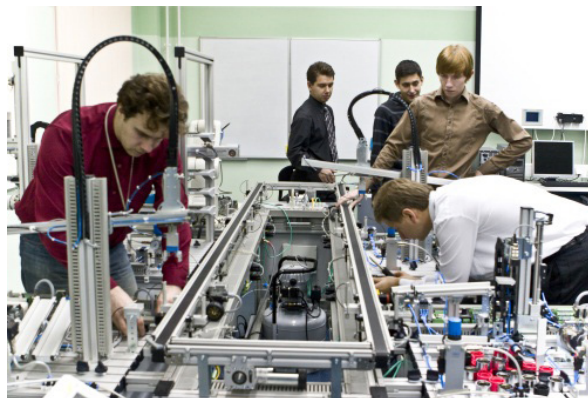
“postsecondary”, or “higher” education (e.g. university, vocational school) for adults. Depending on the system, schools for this period, or a part of it, may be called secondary or high schools, gymnasiums, lyceums, middle schools, colleges, or vocational schools. The exact meaning of any of these terms varies from one system to another. The exact boundary between primary and secondary education also varies from country to country and even within them, but is generally around the seventh to the tenth year of schooling. Secondary education occurs mainly during the teenage years. In the United States, Canada and Australia, primary and secondary education together are sometimes referred to as K-12 education, and in New Zealand Year 1–13 is used. The purpose of secondary education can be to give common knowledge, to prepare for higher education, or to train directly in a profession.

Secondary education in the United States did not emerge until 1910, with the rise of large corporations and advancing technology in factories, which required skilled workers. In order to meet this new job demand, high schools were created, with a curriculum focused on practical job skills that would better prepare students for white collar or skilled blue collar work. This proved beneficial for both employers and employees, since the improved human capital lowered costs for the employer, while skilled employees received a higher wages.

Secondary education has a longer history in Europe, where grammar schools or academies date from as early as the 16th century, in the form of public schools, fee-paying schools, or charitable educational foundations, which themselves date even further back.

Community colleges offer another option at this transitional stage of education. They provide non-residential junior college courses to people living in a particular area.

Tertiary (Higher)



Students in a laboratory, Saint Petersburg State Polytechnical University

Higher education, also called tertiary, third stage, or postsecondary education, is the non-compulsory educational level that follows the completion of a school such as a high school or secondary school. Tertiary education is normally taken to include undergraduate and postgraduate education, as well as vocational education and training. Colleges and universities mainly provide tertiary education. Collectively, these are sometimes known as tertiary institutions. Individuals who complete tertiary education generally receive certificates, diplomas, or academic degrees.

Higher education typically involves work towards a degree-level or foundation degree qualifica-

tion. In most developed countries a high proportion of the population (up to 50%) now enter higher education at some time in their lives. Higher education is therefore very important to national economies, both as a significant industry in its own right, and as a source of trained and educated personnel for the rest of the economy.

University education includes teaching, research, and social services activities, and it includes both the undergraduate level (sometimes referred to as tertiary education) and the graduate (or post-graduate) level (sometimes referred to as graduate school). Universities are generally composed of several colleges. In the United States, universities can be private and independent like Yale University; public and state-governed like the Pennsylvania State System of Higher Education; or independent but state-funded like the University of Virginia. A number of career specific courses are now available to students through the Internet.

One type of university education is a liberal arts education, which can be defined as a “college or university curriculum aimed at imparting broad general knowledge and developing general intellectual capacities, in contrast to a professional, vocational, or technical curriculum.” Although what is known today as liberal arts education began in Europe, the term “liberal arts college” is more commonly associated with institutions in the United States.

Vocational



Carpentry is normally learned through apprenticeship.

Vocational education is a form of education focused on direct and practical training for a specific trade or craft. Vocational education may come in the form of an apprenticeship or internship as well as institutions teaching courses such as carpentry, agriculture, engineering, medicine, architecture and the arts.

Special

In the past, those who were disabled were often not eligible for public education. Children with disabilities were repeatedly denied an education by physicians or special tutors. These early physicians (people like Itard, Seguin, Howe, Gallaudet) set the foundation for special education today. They focused on individualized instruction and functional skills. In its early years, special educa-

tion was only provided to people with severe disabilities, but more recently it has been opened to anyone who has experienced difficulty learning.

Other Educational Forms

Alternative

While considered “alternative” today, most alternative systems have existed since ancient times. After the public school system was widely developed beginning in the 19th century, some parents found reasons to be discontented with the new system. Alternative education developed in part as a reaction to perceived limitations and failings of traditional education. A broad range of educational approaches emerged, including alternative schools, self learning, homeschooling and unschooling. Example alternative schools include Montessori schools, Waldorf schools (or Steiner schools), Friends schools, Sands School, Summerhill School, Walden’s Path, The Peepal Grove School, Sudbury Valley School, Krishnamurti schools, and open classroom schools. Charter schools are another example of alternative education, which have in the recent years grown in numbers in the US and gained greater importance in its public education system.

In time, some ideas from these experiments and paradigm challenges may be adopted as the norm in education, just as Friedrich Fröbel’s approach to early childhood education in 19th-century Germany has been incorporated into contemporary kindergarten classrooms. Other influential writers and thinkers have included the Swiss humanitarian Johann Heinrich Pestalozzi; the American transcendentalists Amos Bronson Alcott, Ralph Waldo Emerson, and Henry David Thoreau; the founders of progressive education, John Dewey and Francis Parker; and educational pioneers such as Maria Montessori and Rudolf Steiner, and more recently John Caldwell Holt, Paul Goodman, Frederick Mayer, George Dennison and Ivan Illich.

Indigenous



Teaching indigenous knowledge, models, methods in Yanyuan County, Sichuan in China

Indigenous education refers to the inclusion of indigenous knowledge, models, methods, and content within formal and non-formal educational systems. Often in a post-colonial context, the growing recognition and use of indigenous education methods can be a response to the erosion and loss

of indigenous knowledge and language through the processes of colonialism. Furthermore, it can enable indigenous communities to “reclaim and revalue their languages and cultures, and in so doing, improve the educational success of indigenous students.”

Informal Learning

Informal learning is one of three forms of learning defined by the Organisation for Economic Co-operation and Development (OECD). Informal learning occurs in a variety of places, such as at home, work, and through daily interactions and shared relationships among members of society. For many learners this includes language acquisition, cultural norms and manners. Informal learning for young people is an ongoing process that also occurs in a variety of places, such as out of school time, in youth programs at community centers and media labs.

Informal learning usually takes place outside educational establishments, does not follow a specified curriculum and may originate accidentally, sporadically, in association with certain occasions, from changing practical requirements. It is not necessarily planned to be pedagogically conscious, systematic and according to subjects, but rather unconsciously incidental, holistically problem-related, and related to situation management and fitness for life. It is experienced directly in its “natural” function of everyday life and is often spontaneous.

The concept of ‘education through recreation’ was applied to childhood development in the 19th century. In the early 20th century, the concept was broadened to include young adults but the emphasis was on physical activities. L.P. Jacks, also an early proponent of lifelong learning, described education through recreation: *“A master in the art of living draws no sharp distinction between his work and his play, his labour and his leisure, his mind and his body, his education and his recreation. He hardly knows which is which. He simply pursues his vision of excellence through whatever he is doing and leaves others to determine whether he is working or playing. To himself he always seems to be doing both. Enough for him that he does it well.”* Education through recreation is the opportunity to learn in a seamless fashion through all of life’s activities. The concept has been revived by the University of Western Ontario to teach anatomy to medical students.

Self-directed Learning

Autodidacticism (also autodidactism) is a contemplative, absorbing process, of “learning on your own” or “by yourself”, or as a self-teacher. Some autodidacts spend a great deal of time reviewing the resources of libraries and educational websites. One may become an autodidact at nearly any point in one’s life. While some may have been informed in a conventional manner in a particular field, they may choose to inform themselves in other, often unrelated areas. Notable autodidacts include Abraham Lincoln (U.S. president), Srinivasa Ramanujan (mathematician), Michael Faraday (chemist and physicist), Charles Darwin (naturalist), Thomas Alva Edison (inventor), Tadao Ando (architect), George Bernard Shaw (playwright), Frank Zappa (composer, recording engineer, film director), and Leonardo da Vinci (engineer, scientist, mathematician).

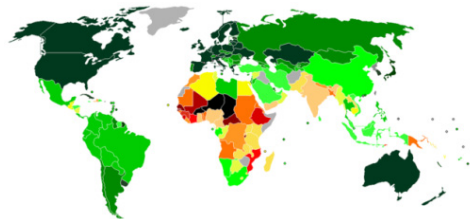
Open Education and Electronic Technology

In 2012, the modern use of electronic educational technology (also called e-learning) had grown at 14 times the rate of traditional learning. Open education is fast growing to become the dominant

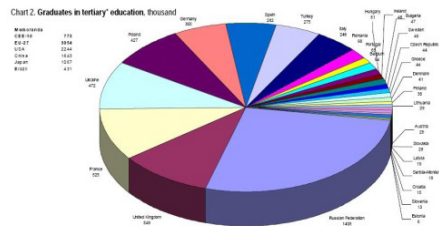
form of education, for many reasons such as its efficiency and results compared to traditional methods. Cost of education has been an issue throughout history, and a major political issue in most countries today. Online courses often can be more expensive than face-to-face classes. Out of 182 colleges surveyed in 2009 nearly half said tuition for online courses was higher than for campus based ones. Many large university institutions are now starting to offer free or almost free full courses such as Harvard, MIT and Berkeley teaming up to form edX. Other universities offering open education are Stanford, Princeton, Duke, Johns Hopkins, Edinburgh, U. Penn, U. Michigan, U. Virginia, U. Washington, and Caltech. It has been called the biggest change in the way we learn since the printing press. Despite favorable studies on effectiveness, many people may still desire to choose traditional campus education for social and cultural reasons.

The conventional merit-system degree is currently not as common in open education as it is in campus universities, although some open universities do already offer conventional degrees such as the Open University in the United Kingdom. Presently, many of the major open education sources offer their own form of certificate. Due to the popularity of open education, these new kind of academic certificates are gaining more respect and equal “academic value” to traditional degrees. Many open universities are working to have the ability to offer students standardized testing and traditional degrees and credentials. A culture is beginning to form around distance learning for people who are looking to social connections enjoyed on traditional campuses. For example, students may create study groups, meetups and movements such as UnCollege.

Development Goals



World map indicating Education Index (according to 2007/2008 Human Development Report)



* tertiary - International Standard Classification of Education (ISCED) level 4-6; level 4, first stage of tertiary education (not leading directly to an advanced research qualification); level 5, second stage of tertiary education (leading to an advanced research qualification). Source: UNESCO Institute for Statistics, UniCredit New Europe Research Network

Russia has more academic graduates than any other country in Europe.
(Chart does not include population statistics.)

Since 1909, the ratio of children in the developing world attending school has increased. Before then, a small minority of boys attended school. By the start of the 21st century, the majority of all children in most regions of the world attended school.

Universal Primary Education is one of the eight international Millennium Development Goals, towards which progress has been made in the past decade, though barriers still remain. Se-

curing charitable funding from prospective donors is one particularly persistent problem. Researchers at the Overseas Development Institute have indicated that the main obstacles to funding for education include conflicting donor priorities, an immature aid architecture, and a lack of evidence and advocacy for the issue. Additionally, Transparency International has identified corruption in the education sector as a major stumbling block to achieving Universal Primary Education in Africa. Furthermore, demand in the developing world for improved educational access is not as high as foreigners have expected. Indigenous governments are reluctant to take on the ongoing costs involved. There is also economic pressure from some parents, who prefer their children to earn money in the short term rather than work towards the long-term benefits of education.

A study conducted by the UNESCO International Institute for Educational Planning indicates that stronger capacities in educational planning and management may have an important spill-over effect on the system as a whole. Sustainable capacity development requires complex interventions at the institutional, organizational and individual levels that could be based on some foundational principles:

- national leadership and ownership should be the touchstone of any intervention;
- strategies must be context relevant and context specific;
- plans should employ an integrated set of complementary interventions, though implementation may need to proceed in steps;
- partners should commit to a long-term investment in capacity development, while working towards some short-term achievements;
- outside intervention should be conditional on an impact assessment of national capacities at various levels;
- a certain percentage of students should be removed for improvisation of academics (usually practiced in schools, after 10th grade).

Internationalization

Nearly every country now has Universal Primary Education.

Similarities — in systems or even in ideas — that schools share internationally have led to an increase in international student exchanges. The European Socrates-Erasmus Program facilitates exchanges across European universities. The Soros Foundation provides many opportunities for students from central Asia and eastern Europe. Programs such as the International Baccalaureate have contributed to the internationalization of education. The global campus online, led by American universities, allows free access to class materials and lecture files recorded during the actual classes.

Education and Technology in Developing Countries

Technology plays an increasingly significant role in improving access to education for people living in impoverished areas and developing countries. Charities like One Laptop per Child are dedicated to providing infrastructures through which the disadvantaged may access educational materials.

The OLPC foundation, a group out of MIT Media Lab and supported by several major corporations, has a stated mission to develop a \$100 laptop for delivering educational software. The laptops were widely available as of 2008. They are sold at cost or given away based on donations.



The OLPC laptop being introduced to children in Haiti

In Africa, the New Partnership for Africa's Development (NEPAD) has launched an "e-school program" to provide all 600,000 primary and high schools with computer equipment, learning materials and internet access within 10 years. An International Development Agency project called *nabuur.com*, started with the support of former American President Bill Clinton, uses the Internet to allow co-operation by individuals on issues of social development.

India is developing technologies that will bypass land-based telephone and Internet infrastructure to deliver distance learning directly to its students. In 2004, the Indian Space Research Organisation launched EDUSAT, a communications satellite providing access to educational materials that can reach more of the country's population at a greatly reduced cost.

Private Vs Public Funding in Developing Countries

Research into LCPS (low cost private schools) found that over 5 years to July 2013, debate around LCPSs to achieving Education for All (EFA) objectives was polarised and finding growing coverage in international policy. The polarisation was due to disputes around whether the schools are affordable for the poor, reach disadvantaged groups, provide quality education, support or undermine equality, and are financially sustainable. The report examined the main challenges encountered by development organisations which support LCPSs. Surveys suggest these types of schools are expanding across Africa and Asia. This success is attributed to excess demand. These surveys found concern for:

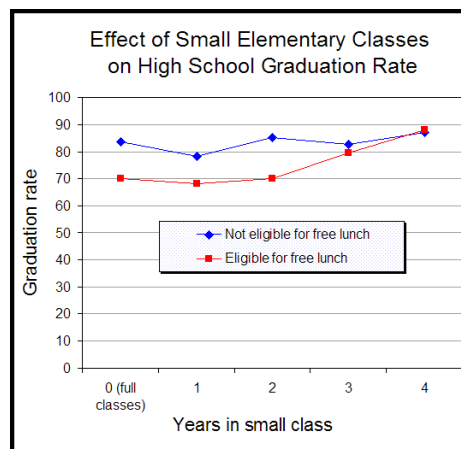
- **Equity:** This concern is widely found in the literature, suggesting the growth in low-cost private schooling may be exacerbating or perpetuating already existing inequalities in developing countries, between urban and rural populations, lower- and higher-income families, and between girls and boys. The report findings suggest that girls may be underrepresented and that LCPS are reaching low-income families in smaller numbers than higher-income families.
- **Quality and educational outcomes:** It is difficult to generalize about the quality of private schools. While most achieve better results than government counterparts, even after their

social background is taken into account, some studies find the opposite. Quality in terms of levels of teacher absence, teaching activity, and pupil to teacher ratios in some countries are better in LCPSs than in government schools.

- **Choice and affordability for the poor:** Parents can choose private schools because of perceptions of better-quality teaching and facilities, and an English language instruction preference. Nevertheless, the concept of ‘choice’ does not apply in all contexts, or to all groups in society, partly because of limited affordability (which excludes most of the poorest) and other forms of exclusion, related to caste or social status.
- **Cost-effectiveness and financial sustainability:** There is evidence that private schools operate at low cost by keeping teacher salaries low, and their financial situation may be precarious where they are reliant on fees from low-income households.

The report showed some cases of successful voucher and subsidy programmes; evaluations of international support to the sector are not widespread. Addressing regulatory ineffectiveness is a key challenge. Emerging approaches stress the importance of understanding the political economy of the market for LCPS, specifically how relationships of power and accountability between users, government, and private providers can produce better education outcomes for the poor.

Educational Theory



A class size experiment in the United States found that attending small classes for 3 or more years in the early grades increased high school graduation rates of students from low income families.

Purpose of Schools

Individual purposes for pursuing education can vary. Understanding the goals and means of educational socialization processes may also differ according to the sociological paradigm used.

The early years of schooling generally focus around developing basic interpersonal communication and literacy skills. This lays a foundation for more complex skills and subjects. Later, education usually turns toward gaining the knowledge and skills needed to create value and establish a livelihood.

People also pursue education for its own sake to satisfy innate curiosity, out of interest in a specific subject or skill, or for overall personal development.

Education is often understood as a means of overcoming handicaps, achieving greater equality, and acquiring wealth and status for all (Sargent 1994). Education is also often perceived as a place where children can develop according to their unique needs and potentials, with the purpose of developing every individual to their full potential.

Some claim that there is education inequality because children did not exceed the education of their parents. This education inequality is then associated with income inequality. Although critical thinking is a goal of education, criticism and blame are often the unintended by products of our current educational process. Students often blame their teachers and their textbooks, despite the availability of libraries and the internet. When someone tries to improve education, the educational establishment itself occasionally showers the person with criticism rather than gratitude. Better by products of an educational system would be gratitude and determination.

Developed countries have people with more resources (housing, food, transportation, water and sewage treatment, hospitals, health care, libraries, books, media, schools, the internet, education, etc.) than most of the world's population. One merely needs to see through travel or the media how many people in the undeveloped countries live to sense this. However, one can also use economic data to gain some insight into this. Yet criticism and blame are common among people in the developed countries.

Gratitude for all these resources and the determination to develop oneself would be more productive than criticism and blame because the resources are readily available and because, if you blame others, there is no need for you to do something different tomorrow or for you to change and improve. Where there is a will, there is a way. People in developed countries have the will and the way to do many things that they want to do. They sometimes need more determination and will to improve and to educate themselves with the resources that are abundantly available. They occasionally need more gratitude for the resources they have, including their teachers and their textbooks. The entire internet is also available to supplement these teachers and textbooks.

Educational Psychology



Knowledge Day in Donetsk, Ukraine, 2013

Educational psychology is the study of how humans learn in educational settings, the effectiveness of educational interventions, the psychology of teaching, and the social psychology of schools as organizations. Although the terms “educational psychology” and “school psychology” are often used interchangeably, researchers and theorists are likely to be identified as educational psychologists, whereas practitioners in schools or school-related settings are identified as school psychologists.

Educational psychology is concerned with the processes of educational attainment in the general population and in sub-populations such as gifted children and those with specific disabilities.

Educational psychology can in part be understood through its relationship with other disciplines. It is informed primarily by psychology, bearing a relationship to that discipline analogous to the relationship between medicine and biology. Educational psychology in turn informs a wide range of specialties within educational studies, including instructional design, educational technology, curriculum development, organizational learning, special education and classroom management. Educational psychology both draws from and contributes to cognitive science and the learning sciences. In universities, departments of educational psychology are usually housed within faculties of education, possibly accounting for the lack of representation of educational psychology content in introductory psychology textbooks (Lucas, Blazek, & Raley, 2006).

The Intelligence–education Relationship

Intelligence is an important factor in how the individual responds to education. Those who have higher intelligence tend to perform better at school and go on to higher levels of education. This effect is also observable in the opposite direction, in that education increases measurable intelligence. Studies have shown that while educational attainment is important in predicting intelligence in later life, intelligence at 53 is more closely correlated to intelligence at 8 years old than to educational attainment.

Learning Modalities

There has been much interest in learning modalities and styles over the last two decades. The most commonly employed learning modalities are:

- Visual: learning based on observation and seeing what is being learned.
- Auditory: learning based on listening to instructions/information.
- Kinesthetic: learning based on movement, e.g. hands-on work and engaging in activities.

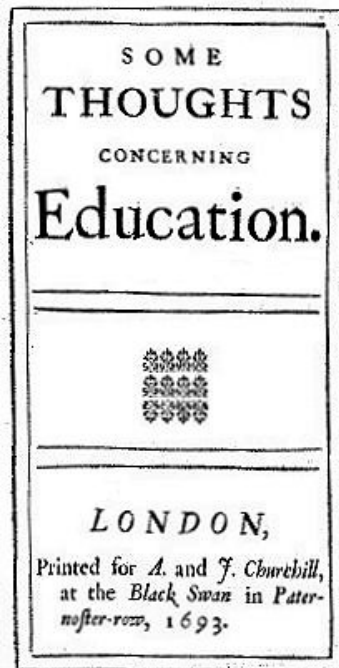
Other commonly employed modalities include musical, interpersonal, verbal, logical, and intrapersonal.

Dunn and Dunn focused on identifying relevant stimuli that may influence learning and manipulating the school environment, at about the same time as Joseph Renzulli recommended varying teaching strategies. Howard Gardner identified a wide range of modalities in his Multiple Intelligences theories. The Myers-Briggs Type Indicator and Keirsey Temperament Sorter, based on the works of Jung, focus on understanding how people's personality affects the way they interact personally, and how this affects the way individuals respond to each other within the learning environment. The work of David Kolb and Anthony Gregorc's Type Delineator follows a similar but more simplified approach.

Some theories propose that all individuals benefit from a variety of learning modalities, while others suggest that individuals may have preferred learning styles, learning more easily through visual or kinesthetic experiences. A consequence of the latter theory is that effective teaching should present a variety of teaching methods which cover all three learning modalities so that dif-

ferent students have equal opportunities to learn in a way that is effective for them. Guy Claxton has questioned the extent that learning styles such as Visual, Auditory and Kinesthetic(VAK) are helpful, particularly as they can have a tendency to label children and therefore restrict learning. Recent research has argued “there is no adequate evidence base to justify incorporating learning styles assessments into general educational practice.”

Philosophy



John Locke's work *Some Thoughts Concerning Education* was written in 1693 and still reflects traditional education priorities in the Western world.

As an academic field, philosophy of education is “the philosophical study of education and its problems (...) its central subject matter is education, and its methods are those of philosophy”. “The philosophy of education may be either the philosophy of the process of education or the philosophy of the discipline of education. That is, it may be part of the discipline in the sense of being concerned with the aims, forms, methods, or results of the process of educating or being educated; or it may be metadisciplinary in the sense of being concerned with the concepts, aims, and methods of the discipline.” As such, it is both part of the field of education and a field of applied philosophy, drawing from fields of metaphysics, epistemology, axiology and the philosophical approaches (speculative, prescriptive, and/or analytic) to address questions in and about pedagogy, education policy, and curriculum, as well as the process of learning, to name a few. For example, it might study what constitutes upbringing and education, the values and norms revealed through upbringing and educational practices, the limits and legitimization of education as an academic discipline, and the relation between education theory and practice.

Curriculum

In formal education, a curriculum is the set of courses and their content offered at a school or uni-

versity. As an idea, curriculum stems from the Latin word for *race course*, referring to the course of deeds and experiences through which children grow to become mature adults. A curriculum is prescriptive, and is based on a more general syllabus which merely specifies what topics must be understood and to what level to achieve a particular grade or standard.

An academic discipline is a branch of knowledge which is formally taught, either at the university—or via some other such method. Each discipline usually has several sub-disciplines or branches, and distinguishing lines are often both arbitrary and ambiguous. Examples of broad areas of academic disciplines include the natural sciences, mathematics, computer science, social sciences, humanities and applied sciences.

Educational institutions may incorporate fine arts as part of K-12 grade curricula or within majors at colleges and universities as electives. The various types of fine arts are music, dance, and theater.

Instruction

Instruction is the facilitation of another's learning. Instructors in primary and secondary institutions are often called teachers, and they direct the education of students and might draw on many subjects like reading, writing, mathematics, science and history. Instructors in post-secondary institutions might be called teachers, instructors, or professors, depending on the type of institution; and they primarily teach only their specific discipline. Studies from the United States suggest that the quality of teachers is the single most important factor affecting student performance, and that countries which score highly on international tests have multiple policies in place to ensure that the teachers they employ are as effective as possible. With the passing of NCLB in the United States (No Child Left Behind), teachers must be highly qualified. A popular way to gauge teaching performance is to use student evaluations of teachers (SETS), but these evaluations have been criticized for being counterproductive to learning and inaccurate due to student bias.

Economics of Education



Students on their way to school, Hakha, Chin State, Myanmar

It has been argued that high rates of education are essential for countries to be able to achieve high levels of economic growth. Empirical analyses tend to support the theoretical prediction that poor countries should grow faster than rich countries because they can adopt cutting edge technologies already tried and tested by rich countries. However, technology transfer requires knowledgeable managers and engineers who are able to operate new machines or production practices borrowed

from the leader in order to close the gap through imitation. Therefore, a country's ability to learn from the leader is a function of its stock of "human capital". Recent study of the determinants of aggregate economic growth have stressed the importance of fundamental economic institutions and the role of cognitive skills.

At the level of the individual, there is a large literature, generally related to the work of Jacob Mincer, on how earnings are related to the schooling and other human capital. This work has motivated a large number of studies, but is also controversial. The chief controversies revolve around how to interpret the impact of schooling. Some students who have indicated a high potential for learning, by testing with a high intelligence quotient, may not achieve their full academic potential, due to financial difficulties.

Economists Samuel Bowles and Herbert Gintis argued in 1976 that there was a fundamental conflict in American schooling between the egalitarian goal of democratic participation and the inequalities implied by the continued profitability of capitalist production.

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Different Types of Education

Education can be categorized based on the level of skill and information imparted and also the physical location where it is attained. Early childhood education is a combination of observational learning by the child and the learning that is fostered in play-schools and kindergarten schools. This chapter links the various stages of a child's life to the education received by exploring early childhood education, primary education, secondary education and higher education. A section also talks about informal education and inclusion.

Early Childhood Education

Early childhood education (ECE; also nursery education) is a branch of education theory which relates to the teaching of young children (formally and informally) up until the age of about eight. Infant/toddler education, a subset of early childhood education, denotes the education of children from birth to age two. In recent years, early childhood education has become a prevalent public policy issue, as municipal, state, and federal lawmakers consider funding for preschool and pre-K.

Context



Children remember and repeat actions they observe.

While the first two years of a child's life are spent in the creation of a child's first "sense of self", most children are able to differentiate between themselves and others by their second year. This differentiation is crucial to the child's ability to determine how they should function in relation to other people. Parents can be seen as a child's first teacher and therefore an integral part of the early learning process.

Early childhood attachment processes that occurs during early childhood years 0–2 years of age, can be influential to future education. With proper guidance and exploration children begin to become more comfortable with their environment, if they have that steady relationship to guide

them. Parents who are consistent with response times, and emotions will properly make this attachment early on. If this attachment is not made, there can be detrimental effects on the child in their future relationships and independence. There are proper techniques that parents and caregivers can use to establish these relationships, which will in turn allow children to be more comfortable exploring their environment. Academic Journal Reference This provides experimental research on the emphasis on caregiving effecting attachment.

Learning Through Play



A child exploring comfortably due to having a secure attachment with caregiver.

Early childhood education often focuses on learning through play, based on the research and philosophy of Jean Piaget, which posits that play meets the physical, intellectual, language, emotional and social needs (PILES) of children. Children's curiosity and imagination naturally evoke learning when unfettered. Thus, children learn more efficiently and gain more knowledge through activities such as dramatic play, art, and social games.

Tassoni suggests that "some play opportunities will develop specific individual areas of development, but many will develop several areas." Thus, It is important that practitioners promote children's development through play by using various types of play on a daily basis. Allowing children to help get snacks ready helps develop math skills (one-to-one ratio, patterns, etc.), leadership, and communication. Key guidelines for creating a play-based learning environment include providing a safe space, correct supervision, and culturally aware, trained teachers who are knowledgeable about the Early Years Foundation.

Davy states that the British Children's Act of 1989 links to play-work as the act works with play workers and sets the standards for the setting such as security, quality and staff ratios. Learning through play has been seen regularly in practice as the most versatile way a child can learn. Margaret McMillan (1860-1931) suggested that children should be given free school meals, fruit and milk, and plenty of exercise to keep them physically and emotionally healthy. Rudolf Steiner (1861-1925) believed play allows children to talk, socially interact, use their imagination and intellectual skills. Marie Montessori (1870-1952) believed that children learn through movement and their senses and after doing an activity using their senses.

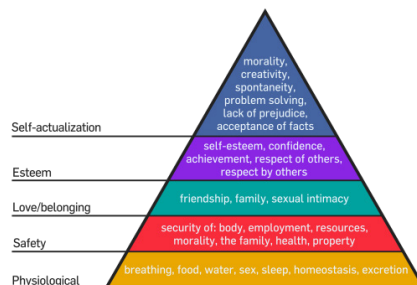
In a more contemporary approach, organizations such as the National Association of the Education of Young Children (NAEYC) promote child-guided learning experiences, individualized learning, and developmentally appropriate learning as tenets of early childhood education.

Piaget provides explanation as to why learning through play is such a crucial aspect of learning as a child. However, due to the advancement of technology the art of play has started to dissolve and has transformed into “playing” through technology. Greenfield, quoted by the author, Stuart Wolpert in the article, “Is Technology Producing a Decline in Critical Thinking and Analysis?”, states, “No media is good for everything. If we want to develop a variety of skills, we need a balanced media diet. Each medium has costs and benefits in terms of what skills each develops.” Technology is beginning to invade the art of play and a balance needs to be found.

Many oppose the theory of learning through play because they think children are not gaining new knowledge. In reality, play is the first way that children learn to make sense of the world at a young age. As children watch adults interact around them, they pick up on their slight nuances - talking on the phone, writing notes, or driving a car. They are exploring different roles, learning how things work, and learning to communicate and work with others. These things cannot be taught by a standard curriculum, but have to be developed through the method of play. Many preschools understand the importance of play and have designed their curriculum around that to allow children to have more freedom. Once these basics are learned at a young age, it sets children up for success throughout their schooling and their life.

Theories of Child Development

The Developmental Interaction Approach is based on the theories of Jean Piaget, Erik Erikson, John Dewey and Lucy Sprague Mitchell. The approach focuses on learning through discovery. > Jean Jacques Rousseau recommended that teachers should exploit individual children’s interests in order to make sure each child obtains the information most essential to his personal and individual development. The five developmental domains of childhood development include:



Maslow's Hierarchy of Needs

- Physical: the way in which a child develops biological and physical functions, including eyesight and motor skills
- Social: the way in which a child interacts with others Children develop an understanding of their responsibilities and rights as members of families and communities, as well as an ability to relate to and work with others.
- Emotional: the way in which a child creates emotional connections and develops self-confidence. Emotional connections develop when children relate to other people and share feelings.
- Language: the way in which a child communicates, including how they present their feelings and emotions, both to other people and to themselves. At 3 months, children employ

different cries for different needs. At 6 months they can recognize and imitate the basic sounds of spoken language. In the first 3 years, children need to be exposed to communication with others in order to pick up language. “Normal” language development is measured by the rate of vocabulary acquisition.

- **Cognitive skills:** the way in which a child organizes information. Cognitive skills include problem solving, creativity, imagination and memory. They embody the way in which children make sense of the world. Piaget believed that children exhibit prominent differences in their thought patterns as they move through the stages of cognitive development: sensorimotor period, the pre-operational period, and the operational period.

Vygotsky’s Socio-cultural Learning Theory

Russian psychologist Lev Vygotsky proposed a “socio-cultural learning theory” that emphasized the impact of social and cultural experiences on individual thinking and the development of mental processes. Vygotsky’s theory emerged in the 1930s and is still discussed today as a means of improving and reforming educational practices.

Vygotsky argued that since cognition occurs within a social context, our social experiences shape our ways of thinking about and interpreting the world. Although Vygotsky predated social constructivists, he is commonly classified as one. Social constructivists believe that an individual’s cognitive system is a result of interaction in social groups and that learning cannot be separated from social life.

Vygotsky proposed that children learn through their interactions with more knowledgeable peers and adults. His concept of the zone of proximal development (ZPD) is the difference between what a learner can do without help and what a learner can do with help. According to Vygotsky, “what is in the zone of proximal development today will be the [child’s] actual developmental level tomorrow”. This theory heavily influenced contemporary early educational practices by increasing focus on material within the ZPD. Vygotsky proposed that children should be taught materials that employ mental processes within the ZPD.

ZPD encourages early childhood educators to adopt “scaffolding”, in which a teacher adjusts support to fit a child’s learning needs. Scaffolding requires specially trained teachers, a differentiated curriculum, and additional learning time. Vygotsky advocated that teachers facilitate rather than direct student learning. His approach calls for teachers to incorporate students’ needs and interests when developing curricula. Every student should actively participate in a reciprocal interaction with their classmates and educators.

Vygotsky’s socio-cultural learning theory has also proven especially important for the education of the mentally disabled. According to Vygotsky, “special education was the creation of what he called a ‘positive differential approach’; that is, the identification of a disabled child from a point of strength rather than disability”. Providing the appropriate scaffolding enables students with special needs to develop abstract thinking.

Piaget’s Constructivist Theory

Jean Piaget’s constructivist theory gained influence in the 1970s and ‘80s. Although Piaget himself was primarily interested in a descriptive psychology of cognitive development, he also laid

the groundwork for a constructivist theory of learning. Piaget believed that learning comes from within: children construct their own knowledge of the world through experience and subsequent reflection. He said that “if logic itself is created rather than being inborn, it follows that the first task of education is to form reasoning.” Within Piaget’s framework, teachers should guide children in acquiring their own knowledge rather than simply transferring knowledge.

According to Piaget’s theory, when young children encounter new information, they attempt to accommodate and assimilate it into their existing understanding of the world. Accommodation involves adapting mental schemas and representations in order to make them consistent with reality. Assimilation involves fitting new information into their pre-existing schemas. Through these two processes, young children learn by equilibrating their mental representations with reality. They also learn from mistakes.

A Piagetian approach emphasizes experiential education; in school, experiences become more hands-on and concrete as students explore through trial and error. Thus, crucial components of early childhood education include exploration, manipulating objects, and experiencing new environments. Subsequent reflection on these experiences is equally important.

Piaget’s concept of reflective abstraction was particularly influential in mathematical education. Through reflective abstraction, children construct more advanced cognitive structures out of the simpler ones they already possess. This allows children to develop mathematical constructs that cannot be learned through equilibration — making sense of experiences through assimilation and accommodation — alone.

According to Piagetian theory, language and symbolic representation is preceded by the development of corresponding mental representations. Research shows that the level of reflective abstraction achieved by young children was found to limit the degree to which they could represent physical quantities with written numerals. Piaget held that children can invent their own procedures for the four arithmetical operations, without being taught any conventional rules.

Piaget’s theory implies that computers can be a great educational tool for young children when used to support the design and construction of their projects. McCarrick and Xiaoming found that computer play is consistent with this theory. However, Plowman and Stephen found that the effectiveness of computers is limited in the preschool environment; their results indicate that computers are only effective when directed by the teacher. This suggests, according to the constructivist theory, that the role of preschool teachers is critical in successfully adopting computers.

Kolb’s Experiential Learning Theory

David Kolb’s experiential learning theory, which was influenced by John Dewey, Kurt Lewin and Jean Piaget, argues that children need to experience things in order to learn: “The process whereby knowledge is created through the transformation of experience. Knowledge results from the combinations of grasping and transforming experience.” The experiential learning theory is distinctive in that children are seen and taught as individuals. As a child explores and observes, teachers ask the child probing questions. The child can then adapt prior knowledge to learning new information.

Kolb breaks down this learning cycle into four stages: concrete experience, reflective observation,

abstract conceptualisation, and active experimentation. Children observe new situations, think about the situation, make meaning of the situation, then test that meaning in the world around them.

The Practical Implications of Early Childhood Education

In recent decades, studies have shown that early childhood education is critical in preparing children to enter and succeed in the (grade school) classroom, diminishing their risk of social-emotional mental health problems and increasing their self-sufficiency as adults. In other words, the child needs to be taught to rationalize everything and to be open to interpretations and critical thinking. There is no subject to be considered taboo, starting with the most basic knowledge of the world he lives in, and ending with deeper areas, such as morality, religion and science. Visual stimulus and response time as early as 3 months can be an indicator of verbal and performance IQ at age 4 years.

By providing education in a child's most formative years, ECE also has the capacity to pre-emptively begin closing the educational achievement gap between low and high-income students before formal schooling begins. Children of low socioeconomic status (SES) often begin school already behind their higher SES peers; on average, by the time they are three, children with high SES have three times the number of words in their vocabularies as children with low SES. Participation in ECE, however, has been proven to increase high school graduation rates, improve performance on standardized tests, and reduce both grade repetition and the number of children placed in special education.

Especially since the first wave of results from the Perry Preschool Project were published, there has been widespread consensus that the quality of early childhood education programs correlate with gains in low-income children's IQs and test scores, decreased grade retention, and lower special education rates.

Several studies have reported that children enrolled in ECE increase their IQ scores by 4-11 points by age five, while a Milwaukee study reported a 25-point gain. In addition, students who had been enrolled in the Abecedarian Project, an often-cited ECE study, scored significantly higher on reading and math tests by age fifteen than comparable students who had not participated in early childhood programs. In addition, 36% of students in the Abecedarian Preschool Study treatment group would later enroll in four-year colleges compared to 14% of those in the control group.

Beyond benefitting societal good, ECE also significantly impacts the socioeconomic outcomes of individuals. For example, by age 26, students who had been enrolled in Chicago Child-Parent Centers were less likely to be arrested, abuse drugs, and receive food stamps; they were more likely to have high school diplomas, health insurance and full-time employment.

The Perry Preschool Project

In Ypsilanti, Michigan, 3 and 4 year-olds from low-income families were randomly assigned to participate in the Perry Preschool. By age 18, they were five times less likely to have become chronic law-breakers than those who were not selected to participate in the Preschool.

The Perry Preschool Study also found that low-income individuals who were enrolled in a quality preschool program earned on average, by age 40, \$5500 per year more than those who were not.

The Perry Preschool Study produced a total benefit/cost ratio of 17:1 (4:1 for participants, 13:1 for the public), with participants on average earning higher incomes, more likely to own their own homes, and less likely to be on welfare.

The authors of the Perry Preschool Project also propose that the return on investment in education declines with the student's age. This study is noteworthy because it advocates for public spending on early childhood programs as an economic investment in a society's future, rather than in the interest of social justice.

In 2008, Michael L. Anderson re-examined the data from Perry and similar projects and found "... girls garnered substantial short- and long-term benefits from the interventions. However, there were no significant long-term benefits for boys."

Early Childhood Education Policy in the United States

In the past decade, there has been a national push for state and federal policy to address the early years as a key component of public education. At the federal level, the Obama administration made the Race to the Top Early Learning Challenge a key tenet of their education reform initiative, awarding \$500 million to states with comprehensive early childhood education plans. In addition, a largely Democratic contingent sponsored the Strong Start for America's Children Act in 2013, which provides free early childhood education for low-income families. Specifically, the Act would generate the impetus and support for states to expand ECE; provide funding through formula grants and Title II (Learning Quality Partnerships), III (Child Care) and IV (Maternal, Infant and Home Visiting) funds; and hold participating states accountable for Head Start early learning standards.

Head Start grants are awarded directly to public or private non-profit organizations, including community-based and faith-based organizations, or for-profit agencies within a community that wish to compete for funds. The same categories of organizations are eligible to apply for Early Head Start, except that applicants need not be from the community they will be serving.

Many states have created new early childhood education agencies. Massachusetts was the first state to create a consolidated department focused on early childhood learning and care. Just in the past fiscal year, state funding for public In Minnesota, the state government created an Early Learning scholarship program, where families with young children meeting free and reduced price lunch requirements for kindergarten can receive scholarships to attend ECE programs. In California, Senator Darrell Steinberg led a coalition to pass the Kindergarten Readiness Act, which creates a state early childhood system supporting children from birth to age five and provides access to ECE for all 4-year-olds in the state. It also created an Early Childhood Office charged with creating an ECE curriculum that would be aligned with the K-12 continuum.

State funding for pre-K increased by \$363.6 million to a total of \$5.6 billion, a 6.9% increase from 2012 to 2013. 40 states fund pre-K programs.

Currently, one of America's larger challenges regarding ECE is an dearth in workforce, partly due to low compensation for rigorous work. The average early childhood teaching assistant earns an annual salary of \$10,500 while the highest paid early childhood educators earn an

average \$18,000 per year. The turnover of ECE staff averages 31% per year. Another challenge is to ensure the quality of ECE programs. Because ECE is a relatively new field, there is little research and consensus into what makes a good program. However, the National Association of the Education of Young Children (NAEYC) is a national organization that has identified evidence-based ECE standards and accredits quality programs. Continuing the leadership role it established with the Common Core, the federal government could play a key role in establishing ECE standards for states.

The American legal system has also played a hand in public ECE. State adequacy cases can also create a powerful legal impetus for states to provide universal access to ECE, drawing upon the rich research illustrating that by the time they enter school, students from low-income backgrounds are already far behind other students. The New Jersey case *Abbott County School District v. Burke* and South Carolina case *Abbeville County School District v. State* have established early but incomplete precedents in looking at “adequate education” as education that addresses needs best identified in early childhood, including immediate and continuous literacy interventions.

In the 1998 case of *Abbott v. Burke* (*Abbott V*), the New Jersey Supreme Court required New Jersey’s poorest school districts to implement high-quality ECE programs and full day kindergarten for all three and four-year-olds. Beyond ruling that New Jersey needed to allocate more funds to preschools in low-income communities in order to reach “educational adequacy,” the Supreme court also authorized the state department of education to cooperate “with... existing early childhood and daycare programs in the community” to implement universal access.

In the 2005 case of *Abbeville v. State*, the South Carolina Supreme Court decided that ECE programs were necessary to break the “debilitating and destructive cycle of poverty for low-income students and poor academic achievement.” Besides mandating that all low-income children have access to ECE by age three, the court also held that early childhood interventions—such as counseling, special needs identification, and socio-emotional supports—continue through grade three (*Abbeville*, 2005). The court furthermore argued that ECE was not only imperative for educational adequacy but also that “the dollars spent in early childhood intervention are the most effective expenditures in the educational process.”

International Agreements

The first World Conference on Early Childhood Care and Education took place in Moscow from 27 to 29 September 2010, jointly organized by UNESCO and the city of Moscow. The overarching goals of the conference are to:

- Reaffirm ECCE as a right of all children and as the basis for development
- Take stock of the progress of Member States towards achieving the EFA Goal 1
- Identify binding constraints toward making the intended equitable expansion of access to quality ECCE services
- Establish, more concretely, benchmarks and targets for the EFA Goal 1 toward 2015 and beyond

- Identify key enablers that should facilitate Member States to reach the established targets
- Promote global exchange of good practices

According to UNESCO a preschool curriculum is one that delivers educational content through daily activities, and furthers a child's physical, cognitive and social development. Generally, preschool curricula are only recognized by governments if they are based on academic research and reviewed by peers.

Preschool for Child Rights have pioneered into preschool curricular areas and is contributing into child rights through their preschool curriculum.

Primary Education

Primary education or elementary education often in primary school or elementary school is typically the first stage of compulsory education, coming between early childhood education and secondary education.

Millennium Development Goal



A poster at the United Nations Headquarters in New York City, New York, United States, showing the Millennium Development Goals.

The United Nations Millennium Development Goal 2 is to achieve universal primary education by the year 2015, by which time they aim to ensure that all children everywhere regardless of race or gender, will be able to complete primary schooling.

Due to the fact that the United Nations OF specifically focusing on Sub-Saharan Africa and Southern Asia, as they are both home to the vast majority of children out of school, they hypothesize that they might not be able to reach their goal by 2015. According to the September 2010 fact sheet, this

is because there are still about 69 million school-age children who are not in school and almost half of them are in sub-Saharan Africa and more than a quarter are in Southern Asia.

In order to achieve the goal by 2015, the United Nations estimates that all children at the official entry age for primary school would have had to be attending classes by 2009. This would depend on the duration of the primary level as well as how well the school schools retain students until the end of the cycle. In half of the sub-Saharan African countries, however, “at least one in four children of primary-school age were out of school in 2008.”

Also, not only is it important for children to be enrolled but countries will need to ensure that there are a sufficient amount of teachers and classrooms to meet the demand. As of 2010 and 2015, the number of new teachers needed in sub-Saharan Africa alone equals the current teaching force in the region.

The gender gap in the number of students not in school has also narrowed. Between 1999 and 2008, the number of girls not in school decreased from 57 percent to 53 percent globally. In some regions, however, there is a greater percentage; for example, in Northern Africa, 66 percent of “out-of-school children” are girls.

According to the United Nations, there are many things in the regions that have been accomplished. Although enrollment in the sub-Saharan area of Africa continues to be the lowest of all regions, by 2010 “it still increased by 18 percentage points—from 58 per cent to 76 per cent—between 1999 and 2008.” There was also progress in both Southern Asia and Northern Africa, where both countries witnessed an increase in enrollment. Southern Asia increased by 11 percentage points and Northern Africa by 8 percentage points over the last decade.

Also, major advances have been made even in some of the poorest countries, again the majority of them in the sub-Saharan region of Africa. With the abolition of primary school fees in Burundi, there was an increase in primary-school enrollment since 1999; it reached 99 percent in 2008. The United Republic of Tanzania experienced a similar outcome. The country doubled its enrollment ratio over the same period. Other regions in Latin America such as Guatemala and Nicaragua as well as Zambia in Southern Africa “broke through the 90 percent towards greater access to primary education.”

Albania

Australia

In Australia, students undertake preschool then 13 years of schooling before moving to vocational or higher education. Primary schooling for most children starts after they turn 5 years old. In most states, children can be enrolled earlier at the discretion of individual school principals on the basis of intellectual giftedness. In Victoria, New South Wales, Northern Territory, ACT and Tasmania students then move through Kindergarten/Preparatory School/Reception and Years 1 to 6 before starting high school. In Queensland, South Australia and Western Australia students do Year 7 while still enrolled at primary school, although most governmental primary schools are moving to a K to 6 structure to line up with the other states in order to ensure that Year 7 students are able to undertake laboratory practical components of the national syllabus.

- Pre-School/Kindergarten: 4 to 5 years old

- Prep./Reception/Kindergarten: 5 to 6 years old
- Grade/Year 1: 6 to 7 years old
- Grade/Year 2: 7 to 8 years old
- Grade/Year 3: 8 to 9 years old
- Grade/Year 4: 9 to 10 years old
- Grade/Year 5: 10 to 11 years old
- Grade/Year 6: 11 to 12 years old
- Grade/Year 7: 12 to 13 years old (SA)

Bangladesh

Brazil

Brazil has recently gone through changes in school grades. Currently, at the age of 6 children attend from the grade 1 to 4 what is called Ensino Primário (Portuguese for Primary Teaching, or Primary School), and afterwards from grade 5 to 9 the Ensino Fundamental (Fundamental Teaching/School). At the age of 15 the teenagers go to Ensino Médio (Mid Teaching/School), which is equivalent High School in other countries, but it is only 3 years long (grades 10 to 12) and can either be a regular or technical course.

Primary school is mandatory and consists in nine years called Ensino Fundamental, separated in Ensino Fundamental I(1st to 5th grades) and Ensino Fundamental II(6th to 9th grades).

- 1st grade: 6 to 7 years old (former pre-school);
- 2nd grade: 7 to 8 years old;
- 3rd grade: 8 to 9 years old;
- 4th grade: 9 to 10 years old;
- 5th grade: 10 to 11 years old;
- 6th grade: 11 to 12 years old;
- 7th grade: 12 to 13 years old;
- 8th grade: 13 to 14 years old;
- 9th grade: 14 to 15 years old.

Primary school is followed by the optional three years called Ensino Médio (former Científico, Liceu or Ginásio).

- 1st grade: 15- to 16-year-olds;
- 2nd grade: 16- to 17-year-olds;
- 3rd grade: 17- to 18-year-olds.

Canada

In Canada, primary school (also referred to as elementary school) usually begins at ages three or four, starting with either Kindergarten or Grade 1 and lasts until age 13 or 14. Many places in Canada have a split between primary and elementary schools.

In Nova Scotia “elementary school” is the most common term. The provincial government of Nova Scotia uses the term “Primary” instead of Kindergarten.

- Pre-kindergarten (Pre-K) and/or Early Childhood Education (ECE) (Ages 3–5) *
- Kindergarten (Ages 4–6) *
- Grade 1 (Ages 5–7)
- Grade 2 (Ages 6–8)
- Grade 3 (Ages 7–9)
- Grade 4 (Ages 8–10)
- Grade 5 (Ages 9–11)
- Grade 6 (Ages 10–12)
- Grade 7 (Ages 11–13) ** Quebec, 1e secondaire
- Grade 8 (Ages 12–14) ** Quebec, 2e secondaire
- Grade 9 (Ages 13–15) ** Quebec, 3e secondaire
- Grade 10 (Ages 14–16) ** Quebec, 4e secondaire
- Grade 11 (Ages 15–17) ** Quebec, 5e secondaire
- Grade 12 (Ages 16–18) (except Quebec) **

* Students in the Prairie Provinces are not required by statute to attend pre-kindergarten or kindergarten ** Quebec only goes up to grade 11 then students are required to go to CÉGEP before University

Denmark

In Denmark, 0 - 9 grade is compulsory primary education.

Most children are pupils in the Danish “Folkeskolen”, which has the current grades: Kindergarten (optional): 3–6 years.

- 0th grade: 5–7 years
- 1st grade: 6–8 years
- 2nd grade: 7–9 years

- 3rd grade: 8–10 years
- 4th grade: 9–11 years
- 5th grade: 10–12 years
- 6th grade: 11–13 years
- 7th grade: 12–14 years
- 8th grade: 13–15 years
- 9th grade: 14–16 years

10th grade (optional): 15–18 years

Estonia

In Estonia, 9 years of primary school (*Põhikool* or “basic school”) are compulsory. The first three grades of primary school are called *Algkool* which can be translated as “beginning school” and can be confused with primary school. In some low density population areas *Algkool* is the only school available and students enter primary school in bigger towns.

- 1st grade: 7–8 years
- 2nd grade: 8–9 years
- 3rd grade: 9–10 years
- 4th grade: 10–11 years
- 5th grade: 11–12 years
- 6th grade: 12–13 years
- 7th grade: 13–14 years
- 8th grade: 14–15 years
- 9th grade: 15–16 years

Finland

9 years of primary school (*Peruskoulu*) are compulsory.

- Preschool (optional): 6–7 years
- 1st grade: 7–8 years
- 2nd grade: 8–9 years
- 3rd grade: 9–10 years
- 4th grade: 10–11 years
- 5th grade: 11–12 years

- 6th grade: 12–13 years
- 7th grade: 13–14 years
- 8th grade: 14–15 years
- 9th grade: 15–16 years
- 10th grade (optional): 16–17 years

France

In France, primary schools provide education from the age of 6 to 11. The students start in CP (cours préparatoire) then pass in CE1, CE2 (cours élémentaires), CM1 and finally CM2 (cours moyens). Before 1941 primary schools had upper sections called *écoles primaires supérieures*, which spanned on four years and enabled students to enter normal schools or clerking professions; such sections were turned into Lycées but *cours complémentaires* remained until 1959, when such courses were turned into *collèges d'enseignement généraux*.

Education is mandatory from 6 years old to 16 years old. Free public and free private education is offered from 3 years old (sometimes 2 years old). Home education is allowed. Occasionally classes are of a double level to make up the number of pupil per class, usually to 29.

Pré-élémentaire (day care)

- garderie (day care)
- crèche (0–3 years old)
- Élémentaire

École maternelle (pre-school)

- toute petite section (2–3 years old) (rare)
- Cycle I
 - petite section (3–4 years old)
 - moyenne section (4–5 years old)
 - grande section (5–6 years old) (September - January)
- Cycle II
 - grande section (5–6 years old) (February - July)

École primaire (primary/elementary)

- CP (cours préparatoire) (6–7 years old) (may be tried a second time (7–8 years old) if reading and writing are not learned the first time)
- CE1 (cours élémentaire 1) (7–8 years old)
- Cycle III

- CE2 (cours élémentaire 2) (8–9 years old)
- CM1 (cours moyen 1) (9–10 years old)
- CM2 (cours moyen 2) (10–11 years old)

Secondary

- Collège (11 – 15 years old - junior high school) *Brevet* diploma
- Lycée (15 – 18 years old - senior high school) *Baccalauréat* diploma supérieur
Premier cycle (17-... years old) - Second cycle (20-... years old) - Troisième cycle (22-... years old)

Collège and *Lycée* are usually separate establishments, with large communes having a *collège*, while the *Lycée* are usually in the larger towns and cities.

Germany

Depending on the federal state, primary schools provide education from Class 1 to Class 4 or from Class 1 to Class 6. After primary school students may attend a Hauptschule, Mittelschule, Regionale Schule or a Realschule, which are more vocationally orientated, a Gymnasium, which is more academically oriented, or a Gesamtschule, which is comparable to a Comprehensive School.



Elementary school (“Grundschule”) in Treia (Germany).

The first school for German children is called Grundschule. It takes usually four years, the pupils are between six and ten years old. The education consists of learning to read, write, basic math and general knowledge. In some schools, a first foreign language is introduced, usually English. In the final year of primary school, children receive a recommendation as to which further school they can attend.

- Kindergarten: 3–6 years
- Grade 1: 6–7 years
- Grade 2: 7–8 years

- Grade 3: 8–9 years
- Grade 4: 9–10 years
- Grade 5: 10–11 years (Berlin and Brandenburg only)
- Grade 6: 11–12 years (Berlin and Brandenburg only)

Depending on the recommendation they received from their teacher, children proceed to their mandatory secondary education in either Hauptschule (Grades 5-9, sometimes 10th grade is added which is then called “Werkrealschule”), Realschule (Grades 5-10), or Gymnasium (Grades 5-12). Upon the successful completion of Grades 11 and 12 in the Gymnasium, students receive the Abitur, a diploma with the permission to enter post-secondary education (similar to the A-level or High School Diploma). The Abitur will not be received at the end of Haupt- and Realschule, but graduating students are eligible to enter the 10th Grade of the Gymnasium if they wish to obtain the Abitur.

Hong Kong

In Hong Kong, students attend primary schools for the first six years of compulsory education.

Hungary

Primary School education for children in Hungary takes 8 years.

- 1st grade: 6–7 years
- 2nd grade: 7–8 years
- 3rd grade: 8–9 years
- 4th grade: 9–10 years
- 5th grade: 10–11 years
- 6th grade: 11–12 years
- 7th grade: 12–13 years
- 8th grade: 13–14 years

Iceland

In Iceland, 10 years of primary school (*Grunnskóli*) are compulsory.

Primary school teaching in Iceland consists of 10 grade levels. These are:

- 1st grade: 6–7 years
- 2nd grade: 7–8 years
- 3rd grade: 8–9 years
- 4th grade: 9–10 years

- 5th grade: 10–11 years
- 6th grade: 11–12 years
- 7th grade: 12–13 years
- 8th grade: 13–14 years
- 9th grade: 14–15 years
- 10th grade: 15–16 years

Indonesia

The Indonesian term for elementary school is *sekolah dasar*.

India

In India, elementary schools provide education from Class 1 to Class 8. The children in these classes are generally aged between 6 and 15 years. It is the next stage after kindergarten (Pre-Nursery, Nursery, Prep or Lower Kindergarten and Upper Kindergarten). The next stage after primary education is Middle School (Class 7th to 10th). In most schools in North India, children in Classes 1st to 3rd are taught English, Hindi, Mathematics, Environmental Science, and General Knowledge. In class 4th and 5th the environmental science subject is replaced by General Science and Social Studies. However some schools may introduce this concept in Class 3 itself. Some schools may also introduce a third language in Class 5th or even in Class 4th. Sanskrit and local state language are the most common third languages taught in Indian schools. At some places, primary education is labeled as the education of Class 3rd to Class 5th and up to class 2nd as pre-primary education. This is because many new concepts are introduced in this class. Children are taught painting instead of drawing and colouring, exams are taken, and Word Sum Puzzle in maths are introduced along with geometry.

The National Council of Educational Research and Training (NCERT) is the apex body for school education in India. The NCERT provides support and technical assistance to a number of schools in India and oversees many aspects of enforcement of education policies. In India, the various bodies governing school education system are:

- The state government boards, in which the majority of Indian children are enrolled.
- The Central Board of Secondary Education (CBSE) board.
- The Council for the Indian School Certificate Examinations (CISCE) board.
- The National Institute of Open Schooling.
- International schools affiliated to the International Baccalaureate Programme and/or the Cambridge International Examinations.
- Islamic Madrasah schools, whose boards are controlled by local state governments, or autonomous, or affiliated with Darul Uloom Deoband.
- Autonomous schools like Woodstock School, Auroville, Patha Bhavan and Ananda Marga Gurukula.

Primary/secondary education in India is segregated as Primary (1st standard to 4th standard), Upper Primary (5th standard to 7th standard), Lower Secondary (8th standard to 10th standard), and Higher Secondary (11th and 12th standard).

- Kindergarten: nursery - 3 years, Lower Kindergarten (LKG) -4 years, Upper Kindergarten (UKG) - 5 years. - These are not mandatory as per government rules but however its recommended before joining 1st standard.
- 1st Standard: 6 years
- 2nd Standard: 7 years
- 3rd Standard: 8 years
- 4th Standard: 9 years
- 5th Standard: 10 years
- 6th Standard: 11 years
- 7th Standard: 12 years
- 8th Standard: 13 years
- 9th Standard: 14 years
- 10th Standard: 15 years
- 11th Standard: 16 years
- 12th Standard: 17 years

Iran

there is 6 years of education in primary school(new educational system).

Ireland

Primary school teaching in Ireland consists of 8 class levels. These are:

- Junior Infants (4–5 years)
- Senior Infants (5–6 years)
- 1st class (Rang a haon, 6–7 years)
- 2nd class (Rang a dó, 7–8 years)
- 3rd class (Rang a trí, 8–9 years)
- 4th class (Rang a ceathair, 9–10 years)
- 5th class (Rang a cúig, 10–11 years)
- 6th class (Rang a sé, 11–12 years)

Junior and Senior infants correspond to Kindergarten.

The subjects mainly taught in primary school are:

- English (Béarla, Spellings are taught more in Primary education, not taught in Secondary although if you make a spelling mistake in Secondary English work, you would be corrected)
- Maths (Mata)
- Irish (Gaeilge)
- Modern European language (i.e. French or/and German) (Very rarely)
- History (Stair)
- Geography (Tíreolaíocht/Tír Eolas, direct translation “Country-science/Country information”)
- Science (Eolaíocht)
- PE (Physical Education), (Corpoideachas, direct translation “Body education”)
- Art (Ealaín)
- Drama (Drámaíocht)
- Music (Ceol)
- SPHE (Social, Personal, Health Education), (OSPS, Oideachas Sóisialta, Pearsanta, Sláintiúil)
- Religion (Reiligiún/Creideamh)

Secondary school teaching in Ireland consists of 6 class levels. These are:

- 1st year (12–13 years)
- 2nd year (13–14 years)
- 3rd year (14–15 years)
- 4th year/Transition Year(TY) (15–16 years) This year is optional.
- 5th year (16–17 years)
- 6th year (17–18 years)

The content of the Religion course taught depends on the management of the school. Many schools are managed and owned by the Roman Catholic Church, with a lesser number belonging to the Church of Ireland and to the Multi Denominational Group Educate Together and a handful run by other religions such as Muslims. Each school body decides on the emphasis of its religious instruction. In Catholic schools 2nd and 6th class prepare children for Holy Communion and Confirmation respectively. In the Church of Ireland this preparation is done when the pupil is aged about 14 years, and is in secondary school.

Children may start at primary school at any age between four and six years of age. Most children finish primary school at or around twelve years of age.

Italy

Primary school teaching in Italy consists of 5 grades. Before the First Grade, there is the kindergarten (*scuola dell'infanzia* in Italian), which is not compulsory and lasts 3 years.

Elementary

- First Grade (6–7 years)
- Second Grade (7–8 years)
- Third Grade (8–9 years)
- Fourth Grade (9–10 years)
- Fifth Grade (10–11 years)

Schools used to have a six-day school week, Monday to Saturday. Lately, as of 2008, most elementary and middle schools have reduced the school week to five days, with high schools remaining with six.

Israel

- Daycare(optional): 4 months-1.5 years
- Preschool: 2 yr.-6 yr.(optional for 2 yr.)
- Kindergarten or Pre-1A: 5-7
- Class 1: 6-7
- Class 2: 7-8
- Class 3: 8-9
- Class 4: 9-10
- Class 5: 10-11
- Class 6: 11-12

Some schools include Classes 7&8 as Elementary School, some include them as High School.

- Class 7: 12-13
- Class 8: 13-14
- Class 9: 14-15
- Class 10: 15-16
- Class 11: 16-17
- Class 12: 17-18

Japan

Kindergartens nursery schools are private institutions and attendance is not mandatory.

- Nursery School / Kindergarten (Junior): 3- to 4-year-olds
- Nursery School / Kindergarten (Intermediate): 4- to 5-year-olds
- Nursery School / Kindergarten (Senior): 5- to 6-year-olds
- Elementary School Grade 1: 6- to 7-year-olds
- Elementary School Grade 2: 7- to 8-year-olds
- Elementary School Grade 3: 8- to 9-year-olds
- Elementary School Grade 4: 9- to 10-year-olds
- Elementary School Grade 5: 10- to 11-year-olds
- Elementary School Grade 6: 11- to 12-year-olds
- Middle School Grade 1: 12- to 13-year-olds
- Middle School Grade 2: 13- to 14-year-olds
- Middle School Grade 3: 14- to 15-year-olds
- High School Grade 1: 15- to 16-year-olds
- High School Grade 2: 16- to 17-year-olds
- High School Grade 3: 17- to 18-year-olds

English has become a compulsory subject at primary schools in Japan, since April 2011 in order to compete with other Asian countries in English proficiency; Japanese students have among the lowest English TOEFL scores in Asia.

Libya

- 1st grade: 6 to 7 years old;
- 2nd grade: 7 to 8 years old;
- 3rd grade: 8 to 9 years old;
- 4th grade: 9 to 10 years old;
- 5th grade: 10 to 11 years old;
- 6th grade: 11 to 12 years old;
- 7th grade: 12 to 13 years old;

- 8th grade: 13 to 14 years old;
- 9th grade: 14 to 15 years old;

Malaysia

In Malaysia, the first six years of compulsory formalised education take place in primary schools, and starts at the age of seven.

Primary education is compulsory in Malaysia. Children spend 6 years in primary schools. In 6th year, students sit for a national standardized test known as the Ujian Pencapaian Sekolah Rendah (UPSR, Primary School Achievement Test).

Level One

Kindergarten : age 5 - 6

- Standard 1 : age 7
- Standard 2 : age 8
- Standard 3 : age 9

Level Two

- Standard 4 : age 10
- Standard 5 : age 11
- Standard 6 : age 12 (UPSR: Ujian Pencapaian Sekolah Rendah or Primary School Achievement Test)

After completing Standard 6, students will go on to secondary schools.

Lower Secondary

- Remove Class / Kelas Peralihan : age 13 (optional for Chinese educated students coming into Secondary Schools so they will be a year older when they start Form 1)
- Form 1 : age 13
- Form 2 : age 14
- Form 3 : age 15 (PT3: Pentaksiran Tingkatan 3 or Lower Secondary Evaluation)

Upper Secondary

- Form 4 : age 16
- Form 5 : age 17 (SPM: Sijil Pelajaran Malaysia or Malaysian Certificate of Education)
- Form 6 (Lower): age 18-19 (optional)
- Form 6 (Upper): age 19-20 (optional)

Next, the students will be moving on into universities or college

Mexico

Morocco

- crèche (0–3 years old)
- École maternelle
- (pre-school)toute petite section (2–3 years old)
- Cycle I
- petite section (3–4 years old)
- moyenne section (4–5 years old)grande section (5–6 years old) (September - January)
- Cycle II
- grande section (5–6 years old) (February - July)
- École primaire (primary/elementary)
- CP (cours préparatoire) (6–7 years old)
- CE1 (cours élémentaire 1) (7–8 years old)
- Cycle III
- CE2 (cours élémentaire 2) (8–9 years old)
- CM1 (cours moyen 1) (9–10 years old)
- CM2 (cours moyen 2) (10–11 years old)
- SecondaryCollège (11 – 15 years old - junior high school) Brevet diploma
- Lycée (15 – 18 years old - senior high school) Baccalauréat diploma

Netherlands

Children in the Netherlands must be at least four years old to enter primary education. Almost all 4-year-olds (99.3%) in the Netherlands indeed attend primary school, although this is not *compulsory* until children reach the age of 5. Primary school is free of charge. In most schools, children are grouped by age in mixed ability classes, with one teacher for all subjects. Primary school consists of 8 groups (thus 8 years of schooling). During the first two years (both kindergarten), children receive an average of 22 hours of education, during the last 6 years children receive an average of 25 hours per week. Schools are open 5 days a week, but all children have a half day on Wednesdays (ending at noon). At the end of primary school, in group 8, schools advice on secondary school choice. Most schools use a national test to support this advice, for instance the ‘Citotoets’, a test developed by the Central Institute for Test development.

- group 1: age 4-5 (kindergarten)

- group 2: age 5-6 (kindergarten)
- group 3: age 6-7 (school curriculum starts with writing, reading, etc.)
- group 4: age 7-8
- group 5: age 8-9
- group 6: age 9-10
- group 7: age 10-11
- group 8: age 11-12 (last school year with advice on secondary school choice)

Pakistan

In Pakistan, children aged between 3–6 years begin attending Pre School which is not mandatory but recommended by the government and private education sectors.

The Pre School is associated with the Early Years of Education (EYE) programme which is basically consists of initial three years of education starting from Play or Pre Nursery Class students age 3+ and Nursery Class Students age 4+ and Prep Class Students age 5+. The most private school have varied classes names for Pre School Classes I-e, Nursery, Kindergarten-1 and Kindergarten-2. Whereas, some other private schools names pre school classes like Nursery, Kindergarten and Prep.

Primary Education is free and mandatory by the Government of Pakistan in the Provincial Government and Federal Government Public Schools. The government obliged parents to enrolled their children in the schools. The student age should be 6+ years when admitted in class 1.

The Primary education in Pakistan is 5 years of education program starting from Class 1 to 5. The elementary school is called middle school in which classes 6 to 8 are taught. The class 8th examination is called the Board Examination and conducted by the Board of Intermediate and Secondary Education (BISE) of each provincial Division in their jurisdiction. The high school is two years of education called Matric which consists of classes 9th and 10th. The students after passing the 10th year of education from BISE examination often called out matriculate. The 11th and 12th years of education classes mostly held in Higher Secondary Schools or at Government Colleges situated in the jurisdiction of the BISE. The classes called 1st, Year and 2nd Year at colleges.

Class	Age
Play Group	3-4
Nursery	4-5
Reception or Prep	5-6
Class 1	6-7
Class 2	7-8
Class 3	8-9
Class 4	9-10
Class 5	10-11

Philippines

In the Philippines, the Department of Education mandates that elementary school lasts for 7 years in the public school system starting with Kindergarten and grade 1 and culminating with grade 6. After successful completion of the 7-year programme shall a student graduate, be awarded an elementary diploma and can move-on to a 4-year junior high school programme (most private schools will require an entrance examination). However most private schools (which usually call the elementary level as “grade school”), especially exclusive schools and those accredited to have a high degree of autonomy from the Department of Education usually extend their programmes to 7th grade and can also include levels such as nursery, kindergarten or preparatory (prep) as entry levels prior to 1st grade. Subjects usually taken up include Communication Arts in Mother Tongue (until Grade 3), English (some private schools break this down into Language and Reading) and Filipino, Mathematics, Science, Social Studies (taught in Mother Tongue from Grade 1-Grade 3, Filipino in Grades 4-6), Music, Art, Physical Education and Health (collectively known as MAPEH), Values Education and Technology and Livelihood Education (TLE). Students in the 6th grade, whether studying in a public or private school are required to undergo a National (Elementary) Achievement Test (NAT) even if grade 6 isn’t the terminal level in that school. The NAT is similar to certain schemes like Primary School Leaving Examination of Singapore (PSLE) except that that NAT score isn’t used as a basis to admit students to a high school. Kindergarten, Grade 1 to Grade 6 are affected with the K-12 education.

Poland

Primary School:

- 0th - 6–7 years old
- 1st - 7–8 years old
- 2nd - 8–9 years old
- 3rd - 9–10 years old
- 4th - 10–11 years old
- 5th - 11–12 years old
- 6th - 12–13 years old

Middle School:

- 1st 13–14 years old
- 2nd 14–15 years old
- 3rd 15–16 years old

Secondary School:

- 1st 16–17 years old (Vocational School, Liceum and Technikum)

- 2nd 17–18 years old (Vocational School, Liceum and Technikum)
- 3rd 18–19 years old (Vocational School, Liceum and Technikum)
- 4th 19–20 years old (only in Technikum)

Higher education: 18 and over Children may end their schooling after passing secondary school if desired.

Portugal

In Portugal, the primary education (*ensino primário*) is known as the 1st cycle of the basic education (*1^o ciclo do ensino básico*). It includes the first four years of compulsory education (*1^a classe*, *2^a classe*, *3^a classe* and *4^a classe*), their pupils being children between six and ten years old. After the education reform of 1986, the former primary education became part of the basic education (*educação básica*).

Basic education now includes:

- 1st cycle (*1^o ciclo*) - former primary education
 - 1st year (6–7 years old)
 - 2nd year (7–8 years old)
 - 3rd year (8–9 years old)
 - 4th year (9–10 years old)
- 2nd cycle (*2^o ciclo*) - former preparatory education
 - 5th year (10–11 years old)
 - 6th year (11–12 years old)
- 3rd cycle (*3^o ciclo*) - former preparatory education (continuation)
 - 7th year (12–13 years old)
 - 8th year (13–14 years old)
 - 9th year (14–15 years old)

Saudi Arabia

The Saudi Arabian term for elementary school is *تعليم ابتدائي*, consisting of students from ages 6 to 12.

Singapore

The medium of instruction is English. After completing kindergarten, or pre-school years, children will then have to go through 6 years of compulsory primary education, from ages 7 to 12. At the end of primary education, students are required to take a standardised national exam, the Primary

School Leaving Examination(also known as PSLE). Based on PSLE results, students apply and are sorted into secondary schools for a 4 or 5-year course.

Primary education in Singapore, normally starting at age seven, is a four-year *foundation stage* (Primary 1 to 4) and a two-year *orientation stage* (Primary 5 to 6). Primary education is compulsory and fees are low at public schools, there are also other fees per student to help cover miscellaneous costs.

During the foundation stage, all students are taught English Language as a first language, a mother tongue as a second language and Mathematics. Science is introduced from Primary 3 onwards. In addition to these examinable subjects, lessons in Civics and Moral Education, arts and crafts, music, health education, social studies and physical education are conducted at various levels. Students are also introduced to project work, receive pastoral care and career guidance, and are to participate in Co-Curricular Activities and Community Involvement Programmes. In the orientation stage, weaker students are banded based on their abilities in the four examinable subjects. Known as “Subject-based Banding”, they take individual subjects either at the standard or foundation level. Conversely, higher mother tongue is offered for higher ability students.

Somalia

In Somalia, pupils start primary school when they are 7 and finish it at the age of 11 starting from form 1 to form 4. Pupils must firstly have attended casual school known as *dugsi* and learnt the Muslim holy book Qur’an, and the meaning of the Arabic language. Pupils who had not done this are not permitted to start primary school as they will be examined before starting. Pupils’ age may sometimes vary seeing that some pupils achieve higher than their predicted grade and may skip the year while some require to repeat the year if they had not achieved the grade required from them. After finishing primary, students move to intermediate school.

South Korea

In South Korea, students attend elementary school from kindergarten to the 6th grade. Students study a wide range of subjects, including: Korean, English, Chinese characters, math, social studies, science, computers, art, physical education, music, health, ethics, and home economics. English instruction generally begins in the 3rd grade. After finishing elementary school, students attend middle school (middle school 1st–3rd grade). The Korean term for elementary school is *chodeung hakgyo* (Hangul: 초등학교).

Sri Lanka

Sweden

Most children attend a preparatory year at the age of 6 even if this initial year is not mandatory. Children then go to the primary school (*grundskola*) through the ages of 7 and 15. After that they can choose to (although it is very uncommon not to) study at a gymnasium for three years where they pick a program devoted to a particular direction (i.e. Science, Aesthetics, Civics). During the gymnasium all students have some subjects they have to study, but not during all three years.

The children doesn’t start receiving grades until their sixth year. There is, however, proposals to

change this to the fourth year. Swedish government

- Pre-school class (not compulsory), age 6
- *Grundskola*
 - *Lågstadium*
 - Year 1, age 7
 - Year 2, age 8
 - Year 3, age 9
 - *Mellanstadium*
 - Year 4, age 10
 - Year 5, age 11
 - Year 6, age 12
 - *Högstadium*
 - Year 7, age 13
 - Year 8, age 14
 - Year 9, age 15
- *Gymnasieskola* (not compulsory), age 16-18

Gymnasieskola is not compulsory but most common. What you wish to read is your choice, if you have the right grades for your wanted education. If there are more people who wish to read than spots, the ones with the highest grades are accepted. This is either a preparation for University or for work.

During the year before children start compulsory school, all children are offered a place in a pre-school class (*förskoleklass*), which combines the pedagogical methods of the pre-school with those of compulsory school. Between ages 7 and 15, children attend compulsory comprehensive school (*grundskola*), divided in three stages. The vast majority of schools in Sweden are municipally run, but there are also independent schools. The education in independent schools has many objectives in common with the municipal school, but it can have an orientation that differs from that of the municipal schools.

Syria

9 years of primary school are compulsory.

Kindergarten (optional): 5–6 years

- 1st grade: 6–7 years

- 2nd grade: 7–8 years
- 3rd grade: 8–9 years
- 4th grade: 9–10 years
- 5th grade: 10–11 years
- 6th grade: 11–12 years
- 7th grade: 12–13 years
- 8th grade: 13–14 years
- 9th grade: 14–15 years

Tunisia

In Tunisia pre-school education (3–6 years) is optional and provided primarily in three settings:

Kindergartens: socio-educational institutions that come under the supervision of Ministry of culture.

Kouttaps: religious institutions also cater for children between 3 and 5 years of age. Their task is to initiate them into learning the Quran as well as reading, writing, and arithmetic. They are under the supervision of the Ministry of Religious Affairs

Preparatory year: It is also an integral part of basic education but it is not compulsory. It is supervised by the Ministry of Education and is provided in public, private and quasi-public primary schools

9 years of basic education are compulsory.

Kindergarten (optional): 5–6 years

1st grade: 6–7 years

2nd grade: 7–8 years

3rd grade: 8–9 years

4th grade: 9–10 years

5th grade: 10–11 years

6th grade: 11–12 years

7th grade: 12–13 years

8th grade: 13–14 years

9th grade: 14–15 years

Turkey

Primary Education in Turkey

Ukraine

United Kingdom

Elementary schools in England and Wales were publicly funded schools which provided a basic standard of education for children aged from six to 14 between 1870 and 1944. These were set up to enable children to receive manual training and elementary instruction and provided a restricted curriculum with the emphasis on reading, writing and arithmetic (the three Rs). The schools operated on a 'monitorial' system, whereby one teacher supervised a large class with the assistance of a team of monitors, who were quite often older pupils. Elementary school teachers were paid by results. Their pupils were expected to achieve precise standards in reading, writing and arithmetic such as reading a short paragraph in a newspaper, writing from dictation, and working out sums and fractions.

Before 1944 around 80 per cent of the school population attended elementary schools through to the age of 14. The remainder transferred either to secondary school or junior technical school at age 11. The school system was changed with the introduction of the Education Act 1944. Education was restructured into three progressive stages which were known as primary education, secondary education and further education.

In the UK, schools providing primary education are now known as primary schools. They generally cater for children aged from four to eleven (Reception to Year Six or in Northern Ireland and Scotland P1 to P7). Primary schools are often subdivided into infant schools for children from four to seven and junior schools for ages seven to 11. In the (diminishing) minority of areas where there is a "three-tier" system, children go to lower school or "first school" until about 9, then middle school until about 13, then upper school; in these places, the term "primary school" is not usually used.

In the UK schools providing primary education in the state sector are known as primary schools. They generally cater for children aged from four to eleven (Reception to Year Six; in Northern Ireland and Scotland Primary One to Primary Seven).

In areas that adopted a three-tier system, the term primary school is often used as an alternative to First School, taking in ages up to 9 or 10 years old, although for education planning purposes, the term "primary education" in these areas will still cover the age groups as in a two-tier system.

In the private sector, fee-paying schools which provide primary education are known as preparatory schools, and they often cater for children up to the age of thirteen. As their name suggests, preparatory schools are designed to prepare pupils for entrance examinations for fee-paying independent schools.

England

Children start school either in the year or the term in which they reach five depending upon the policy of the Local Education Authority. All state schools are obligated to follow a centralized National Curriculum. The primary school years are split into Key Stages:

- Nursery, age 1 to 4
- Reception, age 4 to 5

- Year 1, age 5 to 6
- Year 2, age 6 to 7
- Year 3, age 7 to 8
- Year 4, age 8 to 9
- Year 5, age 9 to 10
- Year 6, age 10 to 11

At the end of Key Stage 2 in Year 6 all children in state primary schools are required to take National Curriculum tests in reading and mathematics also called SATs. All state primary schools are under the jurisdiction of the Department for Children, Schools and Families and are required to receive regular inspections by the Office for Standards in Education (OFSTED). Private schools are inspected by the Independent Schools Inspectorate.

They then change schools to go to secondary school.

- Year 7, age 11 to 12
- Year 8, age 12 to 13
- Year 9, age 13 to 14
- Year 10, age 14 to 15
- Year 11, age 15 to 16
- Year 12, (6th form) 16 to 17
- Year 13 (6th form) 17 to 18

Northern Ireland

Children start school either in the year or the term in which they reach four. All state schools are obliged to follow a centralised National Curriculum. The primary school years are split into Key Stages:

- Primary education
 - Primary school
 - Foundation Stage
 - Primary 1, age 4 to 5
 - Primary 2, age 5 to 6
 - Key Stage 1
 - Primary 3, age 6 to 7
 - Primary 4, age 7 to 8

- Key Stage 2
 - Primary 5, age 8 to 9
 - Primary 6, age 9 to 10
 - Primary 7, age 10 to 11 (Transfer procedure exams to determine secondary school placement.)

At the end of Key Stage 2 in P7, all children are offered the voluntary 11-plus (also called the *transfer procedure*) examinations, though the parents of thirty percent of children elect not to, and send their kids to secondary schools instead of grammar schools.

All state primary schools are under the jurisdiction of the Department of Education.

Scotland

In Scotland children typically spend seven years in a primary school, whose years are named P1 to P7. Children enter P1 at the age of four or five (according to a combination of birth date and parental choice); for example, if your birthday is between 1 March 2015 and 29 February 2016, then you would generally start Primary 1 in August 2020.

Primary Education

- Primary 1 (aged 5–6)
- Primary 2 (aged 6–7)
- Primary 3 (aged 7–8)
- Primary 4 (aged 8–9)
- Primary 5 (aged 9–10)
- Primary 6 (aged 10–11)
- Primary 7 (aged 11–12)

Secondary Education

- 1st year - aged 12 to 13
- 2nd year - aged 13 to 14
- 3rd year - aged 14 to 15
- 4th year - aged 15 to 16
- 5th year - aged 16 to 17
- 6th year - aged 17 to 18

Wales

Children in Wales spend 7 years at primary school between the ages of 4 and 11.

United States

Elementary school in Kentucky, 1946

In the United States, authority to regulate education resides constitutionally with the individual states. The direct authority of the U.S. Congress and the federal U.S. Department of Education is essentially limited to regulation and enforcement of federal constitutional rights. Great indirect authority is exercised through federal funding of national programs and block grants; but there is no obligation upon any state to accept these funds, and the U.S. government otherwise may propose but not enforce national goals, objectives and standards, which generally lie beyond its jurisdiction.

Nevertheless, education has had a relatively consistent evolution throughout the United States. All states have historically made a distinction between two genres of K-12 education and three genres of K-12 school. The genres of education are primary and secondary; and the genres of school are elementary school (Primary school have in common term as well), middle or junior high school, and high school (historically, “senior” high school to distinguish it from the junior school).

Primary education (or “primary school” meaning “primary education”) still tends to focus on basic academic learning and socialization skills, introducing children to the broad range of knowledge, skill and behavioral adjustment they need to succeed in life - and, particularly, in secondary school. Secondary education or secondary school has always focused on preparing adolescents for higher education or/and for careers in industries, trades or professions that do not require an academic degree.

Over the past few decades, schools in the USA have been testing various arrangements which break from the one-teacher, one-class model. Multi-age programs, where children in different grades (e.g. Kindergarten through to second grade) share the same classroom and teachers, is one increasingly popular alternative to traditional elementary instruction. Another alternative is that children might have a main class and go to another teacher’s room for one subject, such as science, while the science teacher’s main class will go to the other teacher’s room for another subject, such as social studies. This could be called a two-teacher, or a rotation. It is similar to the concept of teams in junior high school. Another method is to have the children have one set of classroom teachers in the first half of the year, and a different set of classroom teachers in the second half of the year. Primary School is also known as Elementary school.

43 of the states are now using the Common Core Standards which claim to better prepare students for college and career.

Vietnam

Children normally start primary education at the age of six. Education at this level lasts for 5 years and is compulsory for all children. The country’s literacy rate is over 90%.

According to the Multiple Indicators Cluster Survey 2006 of Vietnam’s General Statistics Office, 96% of six to 11-year-old children enrolled in primary school. However, there was still a significant disparity in the primary education completion rate among different ethnicity. While primary completion rate for Kinh students was 86%, the rate for ethnic minority children was only 61%.

In school year 2009-2010, Vietnam had 15,172 primary schools and 611 combined primary and lower secondary schools. The total enrollment was 7.02 million pupils, of whom 46% were girls.

The renovated primary education curriculum in Vietnam is divided into two phases as follows:

- Phase 1 includes Grades 1, 2 and 3 with 6 subjects: Vietnamese Language, Mathematics, Morality, Nature and Society, Arts and Physical Education.
- Phase 2 includes Grades 4 and 5 with 9 subjects: Vietnamese Language, Mathematics, Morality, Science, History, Geography, Basic Techniques, Music, Arts and Physical Education.

Secondary Education

Secondary education normally takes place in secondary schools, taking place after primary education and may be followed by higher education or vocational training. In some countries, only primary or basic education is compulsory, but secondary education is included in compulsory education in most countries. In post-Soviet countries it is also known as general education or general middle education.

Terminology

Secondary schools may be called *high schools*, *gymnasia*, *lyceums*, *middle schools*, *sixth-form*, *sixth-form colleges*, *vocational schools*, or *preparatory schools*, and the exact meaning of any of these varies between the countries.



High school in Bratislava, Slovakia (Gamča)

By country



Sydney Boys High School

Argentina

The school system is free and mandatory.

Australia

School is compulsory in Australia between the ages of five/six to fifteen/sixteen/seventeen, depending on the state, with, in recent years, over three-quarters of people staying on until their thirteenth year in school. Government schools educate about two-thirds of Australian students, with the other third in independent schools. Government schools are free although most schools charge what are known as “voluntary contributions” or “tax levies”, while independent schools, both religious and secular, charge fees as well as levies. Regardless of what whether a school is government or independent, it is required to adhere to the same curriculum frameworks. Most school students, whether in government or independent school, usually wear uniforms, although there are varying expectations and a few school exceptions.

Each state and territory has its own format of Year 12 matriculation:

- Australian Capital Territory: ACT Year 12 Certificate
- South Australia: South Australian Certificate of Education (SACE)
- Northern Territory: Senior Secondary Studies Certificate / Northern Territory Certificate of Education (NTCE)
- Queensland: Queensland Certificate of Education (QCE)
- New South Wales: Higher School Certificate (HSC)
- Tasmania: Tasmanian Certificate of Education (TCE)
- Victoria: Victorian Certificate of Education (VCE) or Victorian Certificate of Applied Learning (VCAL)
- Western Australia: Western Australian Certificate of Education (WACE)

Belgium

The Belgian school has a three-tier education system, with each stage divided into various levels:

- Basic education (F enseignement fondamental D basisonderwijs)
 - Nursery school (F enseignement maternel D kleuteronderwijs): for children aged 3 to 6; not compulsory
 - Primary school (F enseignement primaire D lager onderwijs): for children aged 6 to 12; compulsory
- Secondary education: there are three cycles (F degrés D graden)
- Post secondary education: organised by universities or schools of higher education, but

also by adult education institutions

- 3-year further education (enseignement supérieur de type court) at bachelor level
- 5-year further education (enseignement de type long) at master's level (one or two more years for doctoral training)

Brazil

In Brazil, since 1996 high school is officially called *Ensino Médio* (formerly *Segundo Grau*). Until the year 1971, *ensino médio* had three different names: *curso científico*, *curso normal* and *curso clássico* (“classic”). As a result, the course was changed after and called *colegial*, also divided, with the first three years were the same for everyone and anyone who would subsequently make the old *normal* and *clássico*, had to do another year.

Historically, in Brazil, is called secondary what is now the second part of primary school (from the sixth year to the ninth year), plus high school.

It is the last phase to basic education. Brazilian high school lasts three years, attempting to deepen what students have learned in the *Ensino Fundamental*. Brazilian high school students are referenced by their year – 1st, 2nd and 3rd years.

Unlike other countries, Brazilian students don't have a final test to conclude studies. Their approval depends only on their final grade on each subject. Each university elaborates its own test to select new students – this test, the *vestibular*, generally happens once a year. Enem, a non-mandatory national exam, evaluates high school students in Brazil and is used to rank both private and public schools.

Best scores are usually achieved by students on public universities. Despite lack of funds and historical and social problems contribute to poor attendance from the students, especially those in public schools, those Universities usually are recognized as academically excellent.

Private establishments, on the other hand, may be recognized as academically excellent or merely as investments in social networking. Schedules vary from school to school. The subjects taught, however, are conceived by the *Ministério da Educação* (Ministry of Education) which emphasises the hard sciences.

The educational year begins in February and finishes in December, often having July as a break; institutions are permitted to define their own actual start and end dates. They must, however, provide at least 200 days of classes per year.

Universities are also divided into public and private. At this level, public ones are considered excellent and their vestibular exam is highly competitive (the exam for med school in UNICAMP may hit 300 candidates per place). For better preparation, therefore, many students take a *curso pré-vestibular* (university preparation course), which is offered by large private high schools.

Colombia

Secondary education in Colombia is divided into two; basic secondary that goes from years 6 to 9,

and mid secondary that are grades 10 and 11. In Colombia, education has always been mandatory but it wasn't until 2012 that all education for kids and teens was made free of charge at any public institution.

Croatia

Secondary education is currently optional, although most political parties now advocate the stance that it should also become compulsory.

Secondary schools in Croatia are subdivided into:

- gymnasiums with four available educational tracks: *prirodoslovno-matematička gimnazija* (specializing in math, informatics and science), *jezična gimnazija* (with at least three foreign languages required), *klasična gimnazija* (with a curriculum centered around classics, namely Latin and Ancient Greek) and *opća gimnazija* (which covers a general education and is not as specific)
- vocational schools

Gymnasiums, schools of economics and schools of engineering take four years. There are also some vocational schools that last only three years.

Secondary schools supply students with primary subjects needed for the necessary work environment in Croatia. People who completed secondary school are classified as “medium expertise” (*srednja stručna sprema* or SSS).

There are currently around 90 gymnasiums and some 300 vocational schools in Croatia. The public secondary schools are under the jurisdiction of regional government, the counties.

Cyprus

1.1 General overview of education stages Cyprus has a three-tier educational system, each stage being divided into specific levels:

- Basic education
 - Nursery (ages 3–5) - not obligatory
 - Pre-primary school (ages 5–6) - at age five, children normally attend the pre-primary class, which prepares them to join primary school
- Primary school (ages 6–12) - has six grades
- Secondary education
 - Gymnasium (ages 12–15) - after primary school, students attend the lower secondary school (gymnasium), which has three grades
 - Eniaio Lykeio or Unified Lyceum (ages 15–18)
- Post-secondary education, public tertiary institutions or universities

Czech Republic

Due to historic reasons, the Czech school system is almost the same as the German school system. The school system is free and mandatory until age 15. After the *Základní škola* (elementary school) at age 15, students are directed to three different optional secondary education schools:

- Střední odborné učiliště (SOU) - designed for students going into a trade (e.g., carpentry, masonry, auto-mechanic); education is three years long and entrance exam free, combined with practice (one week study in school/one week practice in factory, bakery, building site, etc.), finished with a certificate
- Střední odborná škola (SOŠ) - designed for students going into a profession and finishes with the *maturita* as an exit exam. The exit exam consists of two compulsory and two optional subjects. Compulsory subjects are Czech language and world literature and one other language. Optional ones depend on the type of school (such as mathematics, physics, or accounting). The study is four years long and requires passing an entrance exam (Czech language and mathematics or physics, varies with the type of school).
- Gymnázium - designed for students going to university/college and finishes with a *maturita* exam. Also with two mandatory subjects, Czech language and world literature, and one other language or math. Optional subjects vary, usually between humanistic and science. The study is 4, 6 or 8 years long. In the case of the 6 (8) years one, the pupils finish elementary school two (four) years earlier and this two (four) years has harder studying programme on gymnasium. There are also entry exams to all these programmes.

The *maturita* is required for study in university. The Abitur from gymnasium is better for a humanistic pointed university and SOŠ Abitur is better for a technical pointed university.

Denmark



Krabbesholm Højskole

In Denmark it is mandatory to receive education answering to the basic school syllabus until the 10th year of school education, which likewise extends to compulsory pre-schooling since 2009. Pupils can choose an 11th year of school. After the basic school the majority of pupils between ages 15–19 usually choose to go through the three-year “Gymnasium”, which is university-preparato-

ry or high school. Adolescents not attending the Gymnasium most commonly attend vocational training. There are over 100 different vocational courses in Denmark.

Egypt

The secondary school, known as Thanawya Amma (فماع قيوناث), is a three-year program after which the student, according to his score in the final year, can join a higher level of education in a university or, when the score is lower, an institution of education that issues a degree not equal with the university one.

The main defect of such a system that it depends on the final written exam to determine the student's higher education regardless of any activities.

Finland

The Finnish education system is a comparatively egalitarian Nordic system. This means for example no tuition fees for full-time students, and free meals are served to pupils.

The second level education is not compulsory, but an overwhelming majority attends. There is a choice between upper secondary school (*lukio, gymnasium*) and vocational school (*ammattillinen oppilaitos, yrkesinstitut*). Graduates of both upper secondary school and vocational school can apply to study in further education (university and polytechnics).



Helsingin normaalilyseo

Upper secondary school, unlike vocational school, concludes with a nationally graded final examination (*ylioppilastutkinto, studentexamen*). Passing the test is a *de facto* prerequisite for further education. The system is designed so that approximately the lowest scoring 5% fails and also 5% get the best grade. The exam allows for a limited degree of specialization in either natural sciences or social sciences. The graduation is an important and formal family event, like christenings, weddings, and funerals.

In the OECD's international assessment of student performance, PISA, Finland has consistently been among the highest scorers worldwide; in 2003, Finnish 15-year-olds came first in reading literacy, science, and mathematics; and second in problem solving, worldwide. The World Economic Forum ranks Finland's tertiary education #1 in the world. "The Global Competitiveness Report 2006–2007: Country Highlights". World Economic Forum. Retrieved 2007-01-22.

Germany

The German school system is free and compulsory until 9th grade. After the *Grundschule* (primary/elementary school lasting four to six years), teachers recommend each pupil for one of three different types of secondary education. Parents have the final say about which school their child will attend.

- *Hauptschule* - complete after 9th or 10th grade (ages 14 to 16). During apprenticeships, pupils then attend 'Berufsschule, a dual-education vocational secondary school. The *Hauptschule* has been subject to significant criticism, as it tends to segregate the children of low-income families and migrants.
- *Realschule* - complete after 10th grade (age 15 to 16). Those who change their minds and decide to attend university can proceed after testing to:
- *Gymnasium* - academic preparatory school for pupils planning to attend university or *Fachhochschule* and *Hochschule*. Some offer a classical education (Latin, Greek), while others concentrate on economics, natural sciences and the like. The curriculum leading to the *Abitur* degree were recently reduced from 13th grade to 12th grade (ages 17 to 18 - "G8," eight years of *Gymnasium*).
- The *Gesamtschule*, a mixed ability school, puts all pupils in a single building, combining the three main types; these are still quite rare.

Students with special needs (physical and mental condition) are assigned to *Förderschule*.

Hong Kong

Secondary education in Hong Kong is largely based on the British education system. Secondary school starts in the seventh year, or Form One, of formal education, after Primary Six. Students normally spend five years in secondary schools, of which the first three years (Forms One to Three) are compulsory like primary education. Forms Four and Five students prepare for the Hong Kong Certificate of Education Examination (HKCEE), which takes place after Form Five. Students obtaining a satisfactory grade will be promoted to Form Six. They then prepare for the Hong Kong Advanced Level Examination (HKALE) (colloquially *the A-levels*), which is to be taken after Form Seven. The HKALE and HKCEE results will be considered by universities for admission. Some secondary schools in Hong Kong are called 'colleges'. In some schools, Form Six and Form Seven are also called Lower Six and Upper Six respectively.

The HKCEE is equivalent to the British GCSE and HKALE is equivalent to the British A-level.

As of October 2004, there has been heated discussion on proposed changes in the education system, which includes (amongst others) reduction of the duration of secondary education from seven years to six years, and merging the two exams HKCEE and HKALE into one exam, Hong Kong Diploma of Secondary Education (HKDSE). The proposed changes will take effect in 2009.

The secondary education system of Hong Kong, just as other East Asian countries, is examination-oriented. This does the strong but controversial post-school tutorial education industry a favor.

India

There are three important Indian school boards:

- Central Board of Secondary Education (CBSE) - Grades 1 to 12, has competitive exams at 10th and 12th grade with primary emphasis on maths and science.
- Council for the Indian School Certificate Examinations (CISCE) - Grades 1 to 12, has more in-depth study materials, English level is on par with UK, this board offers more choices of subjects.
- State-level education boards - Grades 1 to 12, the curriculum varies from state to state and has more local appeal.

The Ninety-third Amendment Bill, 2002, renumbered as the Constitution (86th Amendment) Act, 2002, passed on 12 December 2002. Art.21A. declares “The State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may, by law, determine.”

Indonesia

Indonesia follows the historical Dutch education system, where the secondary education consists of junior high school (*Sekolah Menengah Pertama* or SMP) and senior high school (*Sekolah Menengah Atas* or SMA); each takes three years. Usually a student continues to SMP at age 12 and starts SMA at age 15.

In the second year (grade 11) of high school (SMA), students can choose one of three majors, namely Natural Science, Social Science and Literature. At the end of the third year (grade 12), students are required to follow the National Examination (formerly *EBTANAS*) that affect students' graduation. High school graduates can continue their education to college or straight to work.

Senior High education is not included in the compulsory government program, only the 6-years primary education and junior high education are, even though since 2005 there is an effort to make high school education compulsory in some areas, for example in the Bantul Regency of Yogyakarta.

	ISCE	Dutch Colonial Education	Indonesian System
1	Primary Education	<i>Europeesche Lagere School</i> <i>Hollandsch-Chineesche School</i> <i>Hollandsch-Inlandsche School</i>	<i>Sekolah Dasar</i>
2	Lower Secondary Education	<i>Hogere Burgerschool</i> <i>Meer Uitgebreid Lager Onderwijs</i>	<i>Sekolah Menengah Pertama</i>
3	Upper Secondary Education	<i>Hogere Burgerschool</i> <i>Algemeene Middelbare School</i>	<i>Sekolah Menengah Atas</i>
			<i>Sekolah Menengah Kejuruan</i>

5	Short-cycle Tertiary Education	<i>Technische Hoogeschool Rechtshoogeschool Geneeskundige Hoogeschool Faculteit der Letteren en Wijsbegeerte Faculteit der Landbouwwetenschap</i>	<i>Universitas Politeknik Sekolah Tinggi</i>
6	Bachelor		
7	Master		
8	Doctoral		

Iraq



Girls at a secondary school in Iraq

- Secondary education in Iraq comprises two stages, each ending in Baccalaureate examination
 - Intermediate three years
 - Preparatory three years
- No student is admitted to college in Iraq before passing the Baccalaureate examination held by this Ministry for preparatory schools.
- The maximum obtainable mark is 100, the minimum passing mark is 50.

Ireland



St. Enda's School

In Ireland secondary school starts at the age of 12, and lasts three or optionally five or six years.

The main types of secondary school are: community schools, comprehensive schools, *colleges* (though this term is more usually applied to third-level institutions like universities), vocational schools, voluntary secondary schools and *meánscoileanna* (secondary schools that teach all subjects through Irish). After three years (age 14-16), every student takes a compulsory state exam known as the Junior Certificate. Typically a student will sit exams in 9 to 11 subjects; English (L1), Irish (L2) and Mathematics are compulsory.

After completing the Junior Certificate, a student may continue for two years to take a second state exam, the Leaving Certificate, around age 17-18. Students typically take 6-8 subjects. Except in exceptional circumstances, subjects taken must include Irish (L1), English (L2) and Mathematics. Leaving Certificate results directly determine admission to university via a ranking system managed by the CAO. More than 80% of students who complete the Junior Certificate continue to the Leaving Certificate.

There is an optional year in many secondary schools in Ireland known as Transition Year, which some students choose to take after completing the Junior Certificate, and before starting the Leaving Certificate. Focusing on broadening horizons, the year is often structured around student projects such as producing a magazine, charity work, or running a small business. Regular classes may be mixed with classes on music, drama, public speaking, etc. Transition year is not formally examined but student progress is monitored by teachers on a continuous basis. Programs vary from school to school. This year also focuses on giving the children an insight into the working world through work experience placements.

In addition to the main school system, Ireland has a parallel system of vocational schools, which place less focus on academic subjects and more on vocational and technical skills - around 25% of students attend these. Many vocational schools also offer night classes to adults. There is also a prominent movement known as *Gaelscoileanna* where every subject is taught through the Irish language, and these are growing fast in number.

Italy

A high school in Palermo, the Liceo classico Vittorio Emanuele II, right next to the cathedral

Secondary school (*Scuola secondaria*) starts at age 11, after 5 years of primary school, and lasts 8 years. Secondary school is divided into 3 + 5 years, according to the following scheme:

- *Scuola secondaria di primo grado* (“first grade secondary school”, “middle school”): mandatory and lasts three years (from 11 to 13). It has a common programme for all pupils, and covers all the classical subjects. It ends with a final exam, which awards a diploma.
- *Scuola secondaria di secondo grado* (“second grade secondary school”, “high school”): lasts 5 years and offers a number of different paths, which can freely be chosen by the pupil. Most paths offer a basic knowledge of Italian and Latin, plus Literature, History, Geography, Philosophy, Mathematics, Physics, Biology, Chemistry, and foreign language. There are three different types of high schools in Italy: Liceo mostly theoretical and Humanities-oriented; Istituto tecnico, originally reserved for those who sought a highly qualified work, but today is used as a more scientific-technical route to access university; Istituto professionale, mainly vocational school which offers a very specialized formation on a spe-

cific field for those looking into entering work. Attending a high school is mandatory until the age of 16 (usually coinciding with the first two years of each course).

All kinds of second-grade secondary schools end with an examination (*Esame di Stato*, “state exam”, but usually still called by its traditional name *Esame di Maturità*, “maturity exam”) whose contents are defined nationwide and score is on a 100-point scale.

Former Yugoslav Republic of Macedonia

High school in Republic of Macedonia is called *средно училиште* and its structure is left from the socialist period. Reforms are being instituted with the goal of bringing the education system in line with the global community. In general, there is high school for preparing for every faculty on the university. There are: electro technical high school, mechanical high school, economics high school, pharmaceutical, medical, and natural sciences and linguistics gymnasium. The high school is attended between the years of 14 and 18 and is compulsory.

Malaysia

The national secondary education in Malaysia, modelled after the (historical) English system, consists of five school years referred to as “forms” (*tingkatan* in Malay). Students begin attending secondary schools in the year they turn 13, after sitting for the UPSR (Ujian Pencapaian Sekolah Rendah or Primary School Assessment Examination) at the end of primary school. Students failing the academic requirement in UPSR are required to read an additional year called the Remove (*Peralihan*) year before they are allowed to proceed to Form 1. Automatic promotion up to Form 5 has been in place since 1996. Some secondary schools offer an additional two years known as “sixth form”, divided into “lower sixth” and “upper sixth”.



A secondary school in Malacca, Malaysia

Forms 1 to 3 are known as Lower Secondary (*Menengah Rendah*), while Forms 4 and 5 are known as Upper Secondary (*Menengah Tinggi*). Streaming into Art, Science or Commerce streams is done at the beginning of the Upper Secondary stage. Students sit for a standardised test at the end of both stages; Penilaian Menengah Rendah (PMR) for Lower Secondary, and Sijil Pelajaran Malaysia (SPM, equivalent to the O-Level examination) for Upper Secondary. At the end of the sixth form, students sit for the Sijil Tinggi Pelajaran Malaysia or the Malaysian Higher School Certificate

(equivalent to the A levels). The language of instruction in national secondary schools is Malay except for language, science and mathematics subjects. Science and mathematics subjects are taught in English since 2003, but Malay will be reintroduced in stages from 2012.

Mexico

Lower-secondary education (three years) is considered part of basic education in Mexico and is compulsory. For entry, students are required to have successfully completed six years of primary education. The next stage (three years), upper-secondary education or preparation school (*preparatoria*), has been compulsory since 2012. It has three pathways: general upper-secondary, technical professional education, and technological upper-secondary. As it has been called *bachillerato* it has been frequently confused with the US' "bachelor's level", which is called "Licenciatura o Ingeniería" in Latin American countries (though not all, as in Venezuela, the US' bachelor's Level is referred to as "doctor"). *Education Around The World: Mexico*. Ed.gov. Retrieved 2011-09-25.

Nepal

Nepal ranks 11th in quality education in the world.

Tribhuvan International University is a worldwide known institution.

Secondary education Nepal was 7 years in duration as of 2012. Its highest value over the past 42 years was 7 years in 2012, while its lowest value was 5 years in 1970.

Netherlands

In the Netherlands, high school is called *middelbare school* (literally "middle-level school") and starts right after the 6th grade of primary school (group 8). Pupils who start at a high school are around age 12. Because education in the Netherlands is compulsory between the ages of 4 and 16 (and partially compulsory between the ages of 16 and 18), all pupils must attend high school.

The high schools are part of the *voortgezet onderwijs* (literally: "continued education"). The *voortgezet onderwijs* consists of three main streams: VMBO, which has 4 grades and is subdivided over several levels; HAVO, which has 5 grades, and VWO, which has six grades. The choice for a particular stream is made based on the scores of an aptitude test (most commonly the CITO test), the advice of the grade 6 teacher, and the opinion of the pupil's parents or caretakers. It is possible to switch between streams. After completing a particular stream, a pupil can continue in the penultimate year of the next stream, from VMBO to HAVO, and from HAVO to VWO.

Successfully completing a particular stream grants access to different levels of tertiary education. After VMBO, a pupil can continue training at the MBO ("middle-level applied education"). A HAVO diploma allows for admission to the HBO ("higher professional education"), which are universities of professional education. Only with a VWO graduation, a pupil can enter a research university.

New Zealand

In New Zealand students attend secondary school from the ages from about 13 to 18 (though it is possible to be 12). Formerly known as Forms 3 to 7, these grades are now known as Years 9

to 13. Schooling is compulsory until the student's 16th birthday. Historically secondary schools are named as either a high school or a college with no differentiation between the two types. NCEA is the Government-supported school qualification. New Zealand also has intermediate schools, but these cover the last two years of primary education (years 7 and 8) and are not secondary schools.

Pakistan

Secondary education in Pakistan begins from grade 9 and lasts for four years. Upon completion of grade 10, students are expected to take a standardised test administered by a regional Board of Intermediate and Secondary Education (BISE). Upon successful completion of this examination, they are awarded a Secondary School Certificate (SSC). This is locally called the "matriculation certificate" or "matric". Students then enter a college and complete grades 11 and 12. Upon completion of grade 12, they again take a standardised test which is also administered by the regional boards. Upon successful completion of this test, students are awarded the Higher Secondary (School) Certificate (HSC). This level of education is also called the F.Sc./F.A/ICS or "intermediate". There are many streams students can choose for their 11 and 12 grades, such as pre-medical, pre-engineering, humanities (or social sciences), computer science and commerce. Some technical streams have recently been introduced for grades 11 and 12.

Alternative qualifications in Pakistan are also available but not maintained by the BISE but by other examination boards. Most common alternative is the General Certificate of Education (GCE), where SSC and HSC are replaced by Ordinary Level (O Level) and Advanced Level (A Level) respectively. Other qualifications include IGCSE which replaces SSC. GCE O Level, IGCSE and GCE AS/A Levels are managed by British examination boards of CIE of the Cambridge Assessment and Edexcel of the Pearson PLC. Advanced Placement (AP) is an alternative option but much less common than GCE or IGCSE. This replaces the secondary school education as "high school education" instead. AP exams are monitored by a North American examination board, the College Board, and can only be given under supervision of centers which are registered with the College Board, unlike GCE O/AS/A Level and IGCSE which can also be given privately.

Paraguay

In Paraguay, secondary education is called *educación media*. After nine years of *educación escolar básica* (primary school), a student can choose to go to either a *bachillerato técnico* (vocational school) or a *bachillerato científico* (high school); both are part of the *educación media* system. These two forms of secondary education last three years, and are usually located in the same campus called *colegio*.

The *bachillerato técnico* combines general education with some specific subjects, referred to as pre-vocational education and career orientation. Fields include mechanical, electricity, commerce, construction, and business administration.

After completing secondary education, a student can enter university. It is also possible for a student to choose both *técnico* and *científico* schooling.

Russia

There were around 60,000 general education schools in 2007–2008 school year; *Statistics (in Russian): number of schools by type and year*. Ministry of Education and Science. 2008-10-06. this number includes ca. 5,000 advanced learning schools specializing in foreign languages, mathematics etc., 2,300 advanced general-purpose schools. Those identified as Russian: Гимназии и лицеи, *gymnasiums* and lycaeums, and 1,800 schools for all categories of disabled children; it does not include vocational technical schools and technicums. Private schools accounted for 0.3% of elementary school enrolment in 2005 and 0.5% in 2005.

According to a 2005 UNESCO report, 96% of the adult population has completed lower secondary schooling and most of them also have an upper secondary education.

Singapore

Children attend primary school for the first 6 levels, then secondary schools for the next 4/5 levels. This is followed by either junior college for two-year courses or centralised institutes for three-year courses.

Based on results of the Primary School Leaving Examination (PSLE), Singapore's students undergo secondary education in either the Special (abolished in 2008), Express, Normal streams or the Integrated Programme (implemented in 2004). Both the Special and Express are four-year courses leading up to a Singapore-Cambridge General Certificate of Education (GCE) "Ordinary" or "O level" examination. The difference between Special and Express is that the former takes higher mother tongue, which can be used as a first language in exams instead of the subject "mother tongue" that Express students take. However, if some Express students can cope with higher mother tongue, they are allowed to use it as a first language in exams too.

The Normal stream is a four-year course leading up to a Singapore-Cambridge GCE "Normal" - "N" level examination, with the possibility of a 5th year followed by a Singapore-Cambridge GCE "Ordinary" - "O" level examination. It is split into "Normal (Academic)" and "Normal (Technical)" where in the latter students take subjects that are technical in nature, such as design and technology.

The Integrated Programme (IP) is a six-year programme offered to the top 10 percent of the cohort to pass through the O level exams, and go straight to the affiliated JC.

After the second year of a secondary school course, students are typically streamed into a wide range of course combinations, making the total number of subject they have to sit for in "O" level six to ten subjects. This includes science (Physics, Biology and Chemistry), humanities (Elective Geography/History, Pure Geography/History, Social Studies, Literature) and additional mathematics subject at a higher level, or "combined" subject modules.

Some schools have done away with the O level examination, and pupils only sit for the A level examination or the International Baccalaureate at the end of their sixth year (known as Year 6 or Junior College 2).

Co-curricular activities have become compulsory at the Secondary level, where all pupils must participate in at least one core CCA, and participation is graded together with other things like Leadership throughout the four years of Secondary education, in a scoring system. Competitions are organised so that students can have an objective towards to work, and in the case of musical groups, showcase talents. “Co-Curricular Activities”. Archived from the original on 2007-08-29. Retrieved 2007-09-07.

Slovenia

In Slovenia, a variety of high-school institutions for secondary education exists one can choose in accordance with his or her interests, abilities and beliefs. The majority of them are public and government-funded, although there are some diocesan upper secondary schools and a Waldorf upper secondary school, which are private and require tuition to be paid.

Upper secondary schools (*gimnazije*) are the most elite and the most difficult high-school programmes, intended for the best students who wish to pursue university education. They are further divided into general upper secondary schools, classical upper secondary schools, technical upper secondary schools, upper secondary schools for arts, and upper secondary schools for business. They all last for four years and conclude with a compulsory leaving examination (*matura*) that is a prerequisite for studying at universities. Their curricula include a wide range of subjects that should deliver a broad general knowledge.

Technical high schools last for four years and cover a wide range of disciplines. They end with a vocational leaving examination and allow pupils to study at vocational or professional colleges.

Vocational high schools come in two varieties: the dual and in school-based programme. For the former, the apprenticeship is provided by employers, while the practical training for the latter is offered in school. Both of them complete with a final examination. Students may continue their education in the two-year vocational-technical programme (colloquially known as 3+2 programme), which prepares them for vocational leaving exam if they want to pursue higher education.

The leaving exam course is a one-year programme, intended for vocational leaving exam graduates. After completing leaving exam course, they take the leaving examination, which makes the eligible for university education.

The vocational course is a one-year programme provided to upper secondary school students who, for various reasons, do not want to continue their education. It concludes with a final examination, qualifying the applicants for a selected occupation.

Spain

Secondary education in Spain is called *educación secundaria obligatoria* (“compulsory secondary education”), usually known as ESO, and lasts for four years (age 12 to 16). As its name indicates, every Spanish citizen must, by law, attend secondary education when they arrive at the defined age. The state is also committed to guaranteeing every student the possibility of attending it, and also at a state-run school (hence no tuition fees) if so demanded.

Sweden

Gymnasium school usually starts at 16, and is not mandatory. However since the 1970s most students attend it.

Turkey



Robert College in Istanbul

Secondary education includes all of the general, vocational and technical education institutions that provide at least four years of education after primary school. The system for being accepted to a high school changes almost every year. Sometimes private schools have different exams; sometimes there are three exams for three years; sometimes there's only one exam but it is calculated differently; sometimes they only look at a student's school grades. Secondary education aims to give students a good level of common knowledge, and to prepare them for higher education, for a vocation, for life and for business in line with their interests, skills and abilities. In the academic year 2001-2002 2.3 million students were enrolled and 134,800 teachers were employed in 6,000 education institutions.

General secondary education covers the education of children between 15-18 for at least four years after primary education. General secondary education includes high schools, foreign language teaching high schools, Anatolian high schools, high schools of science, Anatolian teacher training high schools, and Anatolian fine arts high schools.

Vocational and technical secondary education involves the institutions that both raise students as manpower in business and other professional areas, prepare them for higher education and meet the objectives of general secondary education. Vocational and technical secondary education includes technical education schools for boys, technical education schools for girls, trade and tourism schools, religious education schools, multi-program high schools, special education schools, private education schools and health education schools.

Secondary education is often referred to as high school education, since the schools are called lyceum (*lise*).

Ukraine

United Kingdom

In the United Kingdom secondary schools offer secondary education covering the later years of schooling. State secondary schools in England and Wales are classed as either (selective) grammar schools, (non-selective) comprehensive schools, city technology colleges or academies. Within Scotland, there are only two types of state-run schools, Roman Catholic or non-denominational. Most secondary schools in England and Wales are comprehensive schools. Grammar schools have been retained in some counties in England. Academies (previously known as city academies) are a new type of school introduced in 2000 by the New Labour government of Tony Blair. Independent secondary schools generally take pupils at age 13.

The table below lists the equivalent secondary school year systems used in the United Kingdom:

Scotland	England, Wales	Northern Ireland	Equivalent ages
Primary 7	Year 7 (First Form)	Year 8 (First Form)	11-12
First Year (Secondary 1)	Year 8 (Second Form)	Year 9 (Second Form)	12-13
Second Year (Secondary 2)	Year 9 (Third Form)	Year 10 (Third Form)	13-14
Third Year (Secondary 3)	Year 10 (Fourth Form)	Year 11 (Fourth Form)	14-15
Fourth Year (Secondary 4)	Year 11 (Fifth Form)	Year 12 (Fifth Form)	15-16
Fifth Year (Secondary 5)	Year 12/Lower Sixth/AS/First Year College	Year 13 [Post 16] Lower Sixth	16-17
Sixth Year (Secondary 6)	Year 13/Upper Sixth/A2/Second Year College	Year 14 [Post 16] Upper Sixth	17-18

Private schools in England and Wales generally still refer to years 7-11 as 1st-5th Form, or alternatively private schools refer to Year 7 as IIIrds (Thirds), Y8 as LIV (Lower Four), Y9 as UIV (Upper Four), Y10 as LV (Lower Fifth), Y11 as UV (Upper Fifth) and then Sixth-Form.

England, Wales and Northern Ireland

Education in England, Wales, Northern Ireland

In England, Wales and Northern Ireland, students usually transfer from primary school straight to secondary school at age 11. In a few parts of the UK there are middle schools for ages 9 to 13 (similar to American middle schools), and upper schools for ages 13–18. A handful of 8-12 middle

schools, and 12-16 or 18 secondary schools still exist. These schools were first introduced in September 1968, and the number rose dramatically during the 1970s, but the number of such schools has declined since the mid-1980s.

It is uncommon, but sometimes secondary schools (particularly in South West Wales) can also be split into 'Upper' (ages 13–16) and 'Lower' secondary schools (ages 11–13).

Education is compulsory up until the end of year 13 (the last Friday in June in the academic year a person turns 18). Traditionally the five years of compulsory secondary schooling from ages 11 to 16 were known as "first year" through to "fifth year," (and still are in the private sector) but from September 1990 these years were renumbered Year 7 through to Year 11 (Year 8 to Year 12 in Northern Ireland) with the coming of the National Curriculum.

After Year 11 a student can opt to remain at school, transfer to a college, or to start an apprenticeship. Those who stay at school enter Years 12 and 13 (Years 13 and 14 in Northern Ireland). These years are traditionally known as the Sixth Form ("Lower Sixth" and "Upper Sixth"), and require students to specialise in three to five subjects for their A Levels. In ever-increasing numbers since the 1990s some students also undertake more vocational courses at college such as a BTEC or other such qualification.

This is an unusually specialised curriculum for this age group by international standards, and recently some moves have been made to increase the number of subjects studied. After attaining the relevant A Level qualifications the student can enter university.

Scotland



Balwearie High School

In Scotland, students usually transfer from primary to secondary education at 12 years old, one year later than in the rest of the UK. The first and second years of secondary school (abbreviated to S1 and S2) continues the "Curriculum for Excellence" started in primary school. At age 14, students choose which subjects they wish to study with certain compulsory subjects such as English and Mathematics for S3 and S4. These are called Standard Grades, but some schools use Intermediates which take two years to complete with an exam at the end of S4. At age 16, after Standard Grades or Intermediates, some students leave to gain employment or attend further education colleges, but most students study for Highers, of which five are usually chosen. These take a year to com-

plete. At age 17 some students decide to apply for university or stay on for 6th year, where other Highers are gained, or Advanced Highers are studied. Due to the nature of schooling in Scotland, undergraduate honours degree programmes are four years long as matriculation is normally at the completion of Highers in S5 (age 17), which compares with three years for the rest of the UK from age 18. As well as instruction through the English language education Gaelic medium education is also available throughout Scotland.

United States



West Orange-Stark High School

As part of education in the United States, the definition of secondary education varies among school districts but generally comprises grades 7, 8, and 9 through 12; grade 5 and grade 6 are also sometimes included. Grades 9 through 12 is the most common grade structure for high school.

Vietnam

Secondary education in Vietnam is optional under the law, however most children choose to receive secondary education, since the school fee is affordable for most working families. It is divided into two levels, secondary (grades 6-9) and tertiary (grades 10-12). Students have 12 compulsory subjects to learn, including but not limited to, Literature, Mathematics, Chemistry, Physics, Biology, History, Geography, and Foreign language. Starting from tertiary school (grade 10), each of the above-mentioned subject has two levels of study: Basic and Advanced. Students are divided into five groups:

- Basic group: All subjects are in basic level.
- Group A: Mathematics, Physics and Chemistry are in advanced level.
- Group B: Mathematics, Chemistry and Biology are in advanced level.
- Group C: Literature, History and Geography are in advanced level.
- Group D: Mathematics, Literature and Foreign language are in advanced level.

The division into groups is deemed necessary, as until 2014, students who wishes to go to college had to take a University Entrance exam covering three subjects according to those listed groups. Since 2015, the Ministry of Education has started an experimental program to merge the Graduation Exam and University Entrance exam into one.

To continue tertiary level education, students must pass all end-of-year exams at the end of Grade 9. Students will graduate from high school if they pass the Graduation Test (used to cover six subjects). If not, they must wait for a year to retake the test.

An alternative for tertiary education is institutes of vocational training. Students receive specialized training for a specific trade. After 2.5–3 years students are able to apply for jobs.

Names for Secondary Education by Country

- Argentina: *Secundaria* or *Polimodal*, *Escuela secundaria*
- Australia: *High School*, *Secondary college*
- Austria: *Gymnasium (Ober- & Unterstufe)*, *Hauptschule*, “*Höhere Bundeslehranstalt (HBLA)*”, *Höhere Technische Lehranstalt (HTL)*
- Bahamas, The: *Junior High* (grades 7-9), *Senior High* (grades 10-12)
- Belgium: *middelbare school*, *secundair onderwijs*, *humaniora*, *école secondaire*, *humanités*
- Bolivia: *Educación Primaria Superior* (grades 6-8) and *Educación Secundaria*, (grades 9-12)
- Bosnia and Herzegovina: *srednja škola* (literally *middle school*), *gimnazija* (gymnasium)
- Brazil: *Ensino Médio* (officially), *Colegial* (informally), *Segundo Grau* (formerly);
- Bulgaria: Средно образование (grades 8-12)
- Chile: *Enseñanza Media*.
- Colombia: *Bachillerato*, *Segunda Enseñanza* (literally *Second Learning*)
- People’s Republic of China (China): *zhong xue* (中学; literally, *middle school*), consisting of *chu zhong* (初中; literally *beginning middle*) from grades 7 to 9 and *gao zhong* (高中; literally *high middle*) from grades 10 to 12
- Canada: *high school*, junior high or middle school, *secondary school*, *école secondaire*, *lycée*, *collegiate institute*, *polyvalente*
- Croatia: *srednja škola* (literally *middle school*), *gimnazija* (gymnasium)
- Cyprus: (gymnasium), *Evtaio* (Lyceum)
- Czech Republic: *střední škola* (literally *middle school*), *gymnázium* (gymnasium), *střední odborné učiliště*
- Denmark: *gymnasium*

- Estonia: *Gymnasium, Lyceum*
- Finland: *lukio* (Finn.) *gymnasium* (Swed.)
- France: *collège* (junior), *lycée* (senior)
- Germany: *Gymnasium, Gesamtschule, Realschule, Hauptschule, Fachoberschule*
- Greece: (3 years)(*gymnasium*), *Eviaio*, (1997~2006) (*Lyceum*)
- Hong Kong: *Secondary school*(中學)
- Hungary: *gimnázium* (grammar school), *középiskola* (comprehensive school, lit. “middle-school”), *szakközépiskola* (vocational secondary school, lit. “specified middle-school”)
- Iceland: *framhaldsskóli* (*menntaskóli, iðnskóli, fjölbrautaskóli*)
- India: *secondary school*
- Indonesia: *Sekolah Menengah Atas (SMA)* (lit. “Upper Middle School”), *Sekolah Menengah Pertama (SMP)* (lit. “First Middle School”), *Sekolah Menengah Kejuruan (SMK)* (vocational school, lit. “Middle Vocational School”),
- Italy: *scuola secondaria di primo grado* (3 years) + *scuola secondaria di secondo grado* (5 years): *Liceo, Istituto Tecnico and professionale*(3–4 years).
- Japan: *chūgakkō* (中学校; literally *middle school*), *kōtōgakkō* (高等学校; literally *high school*), *chūtōkyōikugakkō* (中等教育学校; *Secondary School*) - In the pre-Meiji educational system, the equivalent was called “chūsei”
- South Korea: *중등교육* (*joongdeung gyoyook*; literally *middle education*), comprising *중학교* (*joonghakkyo*; grades 7-9, though referred to as “middle school grades 1-3”) and *고등학교* (*godeunghakkyo*; grades 10-12, though referred to as “high school grades 1-3”)
- Liechtenstein: *gymnasium*
- Lithuania: *vidurinė mokykla* (literally *middle school*), *gimnazija* (*gymnasium*), *licėjus* (*lyceum*)
- Malaysia: *secondary school* or *sekolah menengah*, sometimes *high school* is used
- Malta: *skola sekondarja* or *secondary school*
- Mexico: *Educación secundaria y preparatoria*
- Netherlands: *middelbare school* or *voortgezet onderwijs*
- New Zealand: *high school, college* or *secondary school*
- Norway: *Videregående skole*
- Paraguay: *Educación Media*

- Peru: *Educación Secundaria* or *Escuela Secundaria*
- Philippines: *High School* or *Mataas na Paaralan*
- Poland: *gimnazjum* (grades 7-9), *liceum* (grades 10-12)
- Portugal: *2º Ciclo do Ensino Básico* (5th and 6th grades), *3º Ciclo do Ensino Básico* (7th to 9th grades), and *Ensino Secundário, Liceu* (10th to 12th grades)
- Romania: *gimnaziu* (grades 5-8), *liceu* (grades 9-12)
- Russia: *средняя школа* (literally *middle school*)
- Serbia: *gymnasium* (4 years), *professional schools* (4 years), *vocational schools* (3 or 4 years)
- Spain: *Educación secundaria*, composed of two cycles: *E.S.O. (Educación Secundaria Obligatoria)*, compulsory secondary education, 4 years, 7th to 10th grade) and *Bachillerato* (non-compulsory secondary education, 2 years, 11th and 12th grade); formerly, primary education comprised up to the 8th grade and the secondary education was composed of two non-compulsory cycles: *B.U.P. (Bachillerato Unificado Polivalente)*, 3 years, 9th to 11th grade) and *C.O.U. (Curso de Orientación Universitaria)*, 1 year, 12th grade)
- Sweden: *gymnasium*
- Switzerland: *gymnasium*, *secondary school*, *collège* or *lycée*
- Taiwan: *Junior High School* (國民中學), *Senior High School* (高級中學), *Vocational High School* (高級職業中學), *Military School* (軍校), and *Complete High School* (完全中學).
- Turkiye: *Lise*
- United Kingdom: *Secondary School* (May be referred to as High School)
- Ukraine: *середня освіта* (transliteration: *serednya osvita*)
- United States: *high school* (usually grades 9–12 but sometimes 10–12, it is also called *senior high school*) is always considered secondary education; *junior high school* or *middle school* (6–8, 7–8, 6–9, 7–9, or other variations) are sometimes considered secondary education.
- Uruguay: *Liceo* or *Secundaria* (3 years of compulsory education: *Ciclo Básico*; and 3 years of specialization: *Bachillerato Diversificado*, into: Humanities (Law or Economics), Biology (Medicine or Agronomy), Science (Engineering or Architecture), and Art.
- Venezuela: “Bachillerato”
- Vietnam: *Trung ḥc c̣ ṣ* (lit. *basis middle school*) *Trung ḥc pḥ thông* (lit. “popular middle school”).
- Egypt: *Thanawya Amma* (تماع ٲيون اٲ), (public secondary certificate).

Higher Education



The University of al-Qarawiyyin in Fes, Morocco is the world's oldest existing, continually operating and the first degree awarding institution of higher learning in the world according to UNESCO and Guinness World Records.



University of Bologna, located in Bologna, Italy, is the oldest institution of higher education in the Western world.



The University of Pennsylvania considers itself the first institution in the United States of America to use the term “university” in its name.

Higher education, post-secondary education, or third level education is an optional final stage of formal learning that occurs after secondary education. Often delivered at universities, academies, colleges, seminaries, and institutes of technology, higher education is also available through certain college-level institutions, including vocational schools, trade schools, and other career colleges that award academic degrees or professional certifications. Tertiary education at non-degree level is sometimes referred to as further education or continuing education as distinct from higher education.

The right of access to higher education is mentioned in a number of international human rights instruments. The UN International Covenant on Economic, Social and Cultural Rights of 1966 declares, in Article 13, that “higher education shall be made equally accessible to all, on the basis of capacity, by every appropriate means, and in particular by the progressive introduction of free education”. In Europe, Article 2 of the First Protocol to the European Convention on Human Rights, adopted in 1950, obliges all signatory parties to guarantee the right to education.

In the days when few pupils progressed beyond primary education, the term “higher education” was often used to refer to secondary education, which can create some confusion.



Rupert I founded the University of Heidelberg in 1386

Higher education includes teaching, research, exacting applied work (e.g. in medical schools and dental schools), and social services activities of universities. Within the realm of teaching, it includes both the *undergraduate* level, and beyond that, *graduate-level* (or *postgraduate* level). The latter level of education is often referred to as graduate school, especially in North America.

Since World War II, developed and many developing countries have increased the participation of the age group who mostly studies higher education from the elite rate, of up to 15 per cent, to the mass rate of 16 to 50 per cent. In many developed countries, participation in higher education has continued to increase towards universal or, what Trow later called, open access, where over half of the relevant age group participate in higher education. Higher education is important to national economies, both as an industry, in its own right, and as a source of trained and educated personnel for the rest of the economy. College educated workers have commanded a measurable wage premium and are much less likely to become unemployed than less educated workers. However, the admission of so many students of only average ability to higher education inevitably requires a decline in academic standards, facilitated by grade inflation. Also, the supply of graduates in many fields of study is exceeding the demand for their skills, which aggravates graduate unemployment and underemployment, as well as credentialism and educational inflation.

Entrance Standards: Reading, Mathematics, and Writing

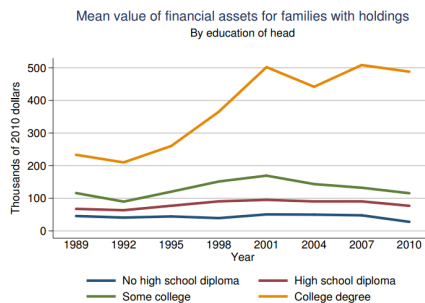
Demonstrated ability in reading, mathematics, and writing, as typically measured in the United States by the SAT or similar tests such as the ACT, have often replaced colleges' individual entrance exams, and is often required for admission to higher education. There is some question as to whether advanced mathematical skills or talent are in fact necessary for fields such as history, English, philosophy, or art.

Types

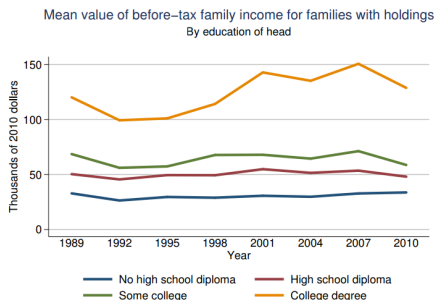
General

The general higher education and training that takes place in a university, college, or Institute of Technology usually includes significant theoretical and abstract elements, as well as applied aspects (although limited offerings of internships or SURF programs attempt to provide practical applications). In contrast, the vocational higher education and training that takes place at vocational universities and schools usually concentrates on practical applications, with very little theory.

In addition, professional-level education is always included within Higher Education, and usually in graduate schools, since many postgraduate academic disciplines are both vocationally, professionally, and theoretically/research oriented, such as in the law, medicine, pharmacy, dentistry, and veterinary medicine. A basic requirement for entry into these graduate-level programs is almost always a bachelor's degree, although alternative means of obtaining entry into such programmes may be available at some universities. Requirements for admission to such high-level graduate programs is extremely competitive, and admitted students are expected to perform well.



Mean financial wealth of U.S. families by education of the head of household, 1989-2010



Mean income of U.S. families by education of the head of household, 1989-2010

In the United States, there are large differences in wages and employment associated with differ-

ent degrees. Medical doctors and lawyers are generally the highest paid workers, and have among the lowest unemployment rates. Among undergraduate fields of study, science, technology, engineering, math, and business generally offer the highest wages and best chances of employment, while education, communication, and liberal arts degrees generally offer lower wages and a lower likelihood of employment.

Liberal Arts

Academic areas that are included within the Liberal arts include Environmental Science, Great Books, History, Languages including English, Linguistics, Literature, Mathematics, Music, Philosophy, Political Science, Psychology, Religious studies, Science, Sociology and Theater.

Engineering

Teaching engineering is teaching the application of scientific, economic, social, and practical knowledge in order to design, build, maintain, and improve structures, machines, devices, systems, materials and processes. It may encompass using insights to conceive, model and scale an appropriate solution to a problem or objective. The discipline of engineering is extremely broad, and encompasses a range of more specialized fields of engineering, each with a more specific emphasis on particular areas of technology and types of application. Engineering disciplines include: aerospace, biological, civil, chemical, computer, electrical, industrial, and mechanical.

Performing Arts

The performing arts differ from the plastic arts or visual arts, insofar as the former uses the artist's own body, face and presence as a medium; the latter uses materials such as clay, metal or paint, which can be molded or transformed to create a work of art.

Performing arts institutions include Circus schools, Dance schools, Drama schools and Music schools

Plastic or Visual Arts

The plastic arts or visual arts are a class of art forms, that involve the use of materials, that can be moulded or modulated in some way, often in three dimensions. Examples are painting, sculpture, and drawing, etc.

Higher educational institutions in these arts include Film schools and Art schools.

Vocational

Higher vocational education and training takes place at the non-university tertiary level. Such education combines teaching of both practical skills and theoretical expertise. Higher education differs from other forms of post-secondary education such as that offered by institutions of vocational education, which are more colloquially known as trade schools. Higher vocational education might be contrasted with education in a usually broader scientific field, which might concentrate on theory and abstract conceptual knowledge.

Professional Higher Education

This describes a distinct form of Higher Education that offers a particularly intense integration with the world of work in all its aspects (including teaching, learning, research and governance) and at all levels of the overarching Qualifications Framework of the European Higher Education Area. Its function is to diversify learning opportunities, enhance employability, offer qualifications and stimulate innovation, for the benefit of learners and society.

The intensity of integration with the world of work (which includes enterprise, civil society and the public sector) is manifested by a strong focus on application of learning. This approach involves combining phases of work and study, a concern for employability, cooperation with employers, the use of practice-relevant knowledge and use-inspired research.

Examples of providers of Professional Higher Education may include, Graduate Colleges of Architecture, Business, Journalism, Law, Library Science, Optometry, Pharmacy, Public Policy, Human Medicine, Professional Engineering, Podiatric Medicine, Scientific Dentistry, K-12 Education, and Veterinary Medicine.

Statistics

A report titled 'Education at a Glance 2014' published by the Organisation for Economic Co-operation and Development on 9 September 2014, revealed that by 2014, 84 percent of young people were completing upper secondary education over their lifetimes, in high-income countries. Tertiary-educated individuals were earning twice as much as median workers. In contrast to historical trends in education, young women were more likely to complete upper secondary education than young men. Additionally, access to education was expanding and growth in the number of people receiving university education was rising sharply. By 2014, close to 40 percent of people aged 25–34 (and around 25 percent of those aged 55–64), were being educated at university.

Recognition of Studies

The Lisbon Recognition Convention stipulates that degrees and periods of study must be recognised in all Signatory Parties of the Convention.

As employers

Universities may employ a number of people. Depending on the funding, a university typically hires one teacher per 3–25 students. According to the ideal of research-university, the university teaching staff is actively involved in the research of the institution. In addition, the university usually also has dedicated research staff and a considerable support staff. Typically to work in higher education as a member of the academic faculty, a candidate must first obtain a doctorate in an academic field, although some lower teaching positions require only a master's degree.

Most of the administrative staff works in different administrative sections, such as Student Affairs. In addition, there may be central support units, such as a university library which have a dedicated staff.



University governance generally involves input from the Faculty. Here James D. Kirylo, president of Southeastern Louisiana University's Faculty Senate confers with Kevin L. Cope, president of the LSU Faculty Senate and president of the Association of Louisiana Faculty Senates, during a 2015 panel presentation in Hammond on university funding issues for Fiscal Year 2016.

The professional field involving the collection, analysis, and reporting of higher education data is called institutional research. Professionals in this field can be found at locations in addition to universities, e.g. state educational departments.

Post secondary institutions also employ graduate students in various assistantship roles. In the US, close to 50% of graduate students are employed as graduate assistants at some point. These apprenticeship-like positions provide opportunities for students to gain experience in, and exposure to, professional roles in exchange for funding of their academic programs.

Recent Controversy

From the early 1950s to the present, more and more people in the United States have gone on to pursue degrees or certificates of higher education. However this has sparked some debate in recent years as some advocates say that a degree is not what it was once worth to employers. To clarify some advocates say that the financial costs that universities require from their students has gone up so dramatically that it is leaving many students in debt of loans of an average of \$33,000. Advocates advise parents to not send their children to college unless these children are committed to pursuing their future education. An increasing number of freshman every year drop out of their perspective programs or do not possess the maturity to have a balanced life away from home.

However statistics from the U.S. Bureau of Labor Statistics indicate that the college educated are employed at a rate nearly twice that of the national average when compared to high school graduates. The type of degree one pursues will determine how safe and prosperous his/her career path is. A study, published by the Pew Charitable Trusts, shows that among Americans ages 21 to 24, the drop in employment and income was much steeper among people who lacked a college degree. "Among those whose highest degree was a high school diploma, only 55% had jobs even before the downturn, and that fell to 47% after it. For young people with an associates degree, the employment rate fell from 64 to 57. Bachelor's degree slipped from 69 to 65." Professor Lisa Kahn of Yale stated that people who graduated from college in the most recent recession were in a position to gain better security than others.

Ultimately a survey, the Great Jobs and Great Lives Gallup-Purdue Index report, released in May,

found the type of college that students attend and in some cases even majors they choose have very little to do with their overall success and well-being later in life. What matters more, the index found, is feeling supported and making emotional connections during school.

Informal Education

Informal Education is a general term for education outside of a standard school setting. Informal Education is the wise, respectful and spontaneous process of cultivating learning. It works through conversation, and the exploration and enlargement of experience. For Example, Informal education has activities with children, young people and adults. Sometimes there is a clear objective link to some broader plan - example around the development of reading. It can refer to various forms of alternative education, such as:

- Unschooling or homeschooling
- Autodidacticism (Self-teaching)
- Youth work

Informal education consists of accidental, unclear, quantitative information. It usually has a quantitative aspect then a qualitative one. Informal education exceeds formal education in content and knowledge.

Role of Informal Education

Informal Education is a general term for education outside of a standard school setting. Informal Education is the wise, respectful and spontaneous process of cultivating learning. It works through conversation, and the exploration and enlargement of experience. For Example, Informal education has activities with children, young people and adults. Sometimes there is a clear objective link to some broader plan - example around the development of reading. It can refer to various forms of alternative education, such as: An important role in informal education is played by mass media. In order to meet information that come from mass media youthful, you need to analyse, synthesis and then accept the results. Informal education refers even too emotions, feelings, believe, superstitions, etc. Gained knowledge as a result of formal, non-formal educations sooner or later if passed through prism of informal education and takes the form of values, believes, traditions, etc.

In the center of informal education concepts is situated the individual. The reaction of different persons to similar information can be different in each case this is why it can't be predicted or controlled. Informal education is the least controlled, that's why this type of education cannot be excluded of somebodies life. Ability to react in different situations. Ability to understand and control new situations. A complete understanding of self and group needs an necessities. Combination of certain social entities than has a base goal education. Informal Education may be viewed as the learning that comes as a part of being involved in youth and community organisations. In these settings there are specialist workers or educated whose job is to encourage people to think about experiences and situations. This education is a spontaneous process

helping people to learn. Its helps to cultivate communities, associations and relationships that make for human flourishing.

Characteristics of Informal Education

1. Informal Education place conversation at the center of their activities.
2. They operate in a wide range of settings, often within the same day. These include center, schools, colleges, peoples home, workplaces and social, cultural and sporting setting.
3. Informal Education look to create or deepen situations where people can learn spontaneously explore and enlarge experience and make changes.
4. Informal Education place special emphasis on building just a democratic relationship and organization that allow people to share in community.
5. Informal Education has no formal curriculum and no credits earned. The teacher is simply someone with more experiences such as parent, grandparent, or a friend.

Informal Education Offers the Following

1. Responsiveness when interact with environment.
2. Possibility to freely act in unknown situation.
3. Possibility of an individual learning, without any obligations.
4. Free choice and change of interest.
5. Freedom of self formation.
6. Develop the human learning

Conversation

Informal Education is driven by conversation and being with others. It develops through spending time with people - sharing in their - and listening and talking. Catherane Blyth has described conversation has “the spontaneous business of making connections” (Blyth 2008:4). It involves connecting with both ideas and other people. “ Conversation changes the way you see the world, and even changes the world” (Zeldin 1999:3).

When we put conversation at the center of education it leads to exchange of thoughts which doesn't have predetermined curriculum or plan. In conversation we, as educated, have to catch moment where we can say or do something to deepen people's thinking's or put it themselves in touch with there feelings. For the most part, we do not have lesson plans to follow, we respond to situations, to experiences.

Spontaneity - Exploring and Enlarging Experience

All educated should attend to experience and encourage people to reflect, informal educators are

thrown in to this. As John Dewey once wrote, “the business of education might be defined as Emancipation and Enlargement of Experience”. (1933:340).

Anywhere, Anytime

Such conversations and activities can take place anywhere and that anytime. Informal education works through and is driven by, conversation it is spontaneous and involves exploring and enlarging experience. It can takes place in any settings.

Purpose of Informal Education

The purpose of informal education is no different to any other form of education in one situation it may focus on healthy eating, in another family relationship. However, running through all these is a concerns to build the sorts of communities and relationships in which people can be happy and fulfilled. The values and behaviors needed for conversations to take place requires co-operation and neighborliness, co-operation and democracy are to flourish.

Informal Education Tends to Emphasise Certain Values it Includes

1. Work for the well being of all.
2. Respect the unique value and dignity of each human being.
3. Dialogue.
4. Equality and justice.
5. Democracy and the active involvement of people in the issues that affect their life. (Jeff and Smith 2005:95-6)

Informal Education focuses on values. There is no curriculum or guiding plan for a lot of work.

Advantages

1. Ability to react in different situations.
2. Ability to understand and control new situations.
3. A complete understanding of self and group needs an necessities.
4. Combination of certain social entities than has a base goal education.

Informal Education may be viewed as the learning that comes as a part of being involved in youth and community organisations. In these settings there are specialist workers or educated whose job is to encourage people to think about experiences and situations. This education is a spontaneous process helping people to learn. Its helps to cultivate communities, associations and relationships that make for human flourishing.

Informal Educators work in many different kinds of settings with individuals and groups who choose to engage with them. The mass media (including television, video games, magazines, etc.),

museums, libraries, zoos, after-school groups and other community-based organizations and cultural institutions offer forms of informal education.

Inclusion (Education)

Inclusion in education is an approach to educating students with special educational needs. Under the inclusion model, students with special needs spend most or all of their time with non-special needs students. Inclusion rejects the use of special schools or classrooms to separate students with disabilities from students without disabilities.

Implementation of these practices varies. Schools most frequently use the inclusion model for selected students with mild to moderate special needs. Fully inclusive schools, which are rare, do not separate “general education” and “special education” programs; instead, the school is restructured so that all students learn together.

Inclusive education differs from the ‘integration’ or ‘mainstreaming’ model of education, which tended to be concerned principally with disability and special educational needs, and learners changing or becoming ‘ready for’ or deserving of accommodation by the mainstream. By contrast, inclusion is about the child’s right to participate and the school’s duty to accept the child.

A premium is placed upon full participation by students with disabilities and upon respect for their social, civil, and educational rights. Feeling included is not limited to physical and cognitive disabilities, but also includes the full range of human diversity with respect to ability, language, culture, gender, age and of other forms of human differences. Richard Wilkinson and Kate Pickett wrote, “student performance and behaviour in educational tasks can be profoundly affected by the way we feel, we are seen and judged by others. When we expect to be view as inferior, our abilities seem to diminish”.

Inclusion, Integration and Mainstreaming

Inclusion has different historical roots which may be integration of students with severe disabilities in the US (who may previously been excluded from schools or even lived in institutions) or an inclusion model from Canada and the US (e.g., Syracuse University, New York) which is very popular with inclusion teachers who believe in participatory learning, cooperative learning, and inclusive classrooms.

Inclusive education differs from the early university professor’s work (e.g., 1970s, Education Professor Carol Berrigan of Syracuse University, 1985; Douglas Biklen, Dean of School of Education through 2011) in *integration*|*integration* and *mainstreaming* which were taught throughout the world including in international seminars in Italy. Mainstreaming (e.g., the Human Policy Press poster; If you thought the wheel was a good idea, you’ll like the ramp)tended to be concerned about “readiness” of all parties for the new coming together of students with significant needs. Thus, integration and mainstreaming principally was concerned about disability and ‘special educational needs’ (since the children were not in the regular schools) and involved teachers, students, principals, administrators, School Boards, and parents changing and becoming ‘ready for’ students who

needed accommodation or new methods of curriculum and instruction (e.g., required federal IEPs - individualized education program) by the mainstream.

By contrast, inclusion is about the child's right to participate and the school's duty to accept the child returning to the US Supreme Court's *Brown vs. the Board of Education* decision and the new Individuals with Disabilities Education (Improvement) Act (IDEIA). Inclusion rejects the use of special schools or classrooms, which remain popular among large multi-service providers, to separate students with disabilities from students without disabilities. A premium is placed upon full participation by students with disabilities, in contrast to earlier concept of partial participation in the mainstream, and upon respect for their social, civil, and educational rights. Inclusion gives students with disabilities skills they can use in and out of the classroom.

Fully Inclusive Schools and General or Special Education Policies

Fully inclusive schools, which are rare, no longer distinguish between "general education" and "special education" programs which refers to the debates and federal initiatives of the 1980s, such as the Community Integration Project and the debates on home schools and special education-regular education classrooms; instead, the school is restructured so that all students learn together. All approaches to inclusive schooling require administrative and managerial changes to move from the traditional approaches to elementary and high school education.

Inclusion remains in 2015 as part of school (e.g., Powell & Lyle, 1997, now to the most integrated setting from LRE) and educational reform initiatives in the US and other parts of the world. Inclusion is an effort to improve quality in education in the fields of disability, is a common theme in educational reform for decades, and is supported by the UN Convention on the Rights of Persons with Disabilities (UN, 2006). Inclusion has been researched and studied for decades, though reported lightly in the public with early studies on heterogeneous and homogeneous ability groupings (Stainback & Stainback, 1989), studies of critical friends and inclusion facilitators (e.g., Jorgensen & Tashie, 2000), self-contained to general education reversal of 90% (Fried & Jorgensen, 1998), among many others obtaining doctoral degrees throughout the US.

Classification of Students and Educational Practices

Classification of students by disability is standard in educational systems which use diagnostic, educational and psychological testing, among others. However, inclusion has been associated with its own planning, including MAPS which Jack Pearpoint leads with still leads in 2015 and person-centred planning with John O'Brien and Connie Lyle O'Brien who view inclusion as a force for school renewal.

Inclusion has two sub-types: the first is sometimes called regular inclusion or partial inclusion, and the other is full inclusion.

Inclusive practice is not always inclusive but is a form of integration. For example, students with special needs are educated in regular classes for nearly all of the day, or at least for more than half of the day. Whenever possible, the students receive any additional help or special instruction in the general classroom, and the student is treated like a full member of the class. However, most specialized services are provided outside a regular classroom, particularly if these services require

special equipment or might be disruptive to the rest of the class (such as speech therapy), and students are pulled out of the regular classroom for these services. In this case, the student occasionally leaves the regular classroom to attend smaller, more intensive instructional sessions in a resource room, or to receive other related services, such as speech and language therapy, occupational and/or physical therapy, psychological services, and social work. This approach can be very similar to many mainstreaming practices, and may differ in little more than the educational ideals behind it.

In the “full inclusion” setting, the students with special needs are always educated alongside students without special needs, as the first and desired option while maintaining appropriate supports and services. Some educators say this might be more effective for the students with special needs. At the extreme, full inclusion is the integration of all students, even those that require the most substantial educational and behavioral supports and services to be successful in regular classes and the elimination of special, segregated special education classes. Special education is considered a service, not a place and those services are integrated into the daily routines and classroom structure, environment, curriculum and strategies and brought to the student, instead of removing the student to meet his or her individual needs. However, this approach to full inclusion is somewhat controversial, and it is not widely understood or applied to date.

Much more commonly, local educational agencies have the responsibility to organize services for children with disabilities. They may provide a variety of settings, from special classrooms to mainstreaming to inclusion, and assign, as teachers and administrators often do, students to the system that seems most likely to help the student achieve his or her individual educational goals. Students with mild or moderate disabilities, as well as disabilities that do not affect academic achievement, such as using power wheelchair, scooter or other mobility device, are most likely to be fully included; indeed, children with polio or with leg injuries have grown to be leaders and teachers in government and universities; self advocates travel across the country and to different parts of the world. However, students with all types of disabilities from all the different disability categories have been successfully included in general education classes, working and achieving their individual educational goals in regular school environments and activities.

Alternatives to Inclusion Programs: School Procedures and Community Development

Students with disabilities who are not included are typically either mainstreamed or segregated.

A mainstreamed student attends some general education classes, typically for less than half the day, and often for less academically rigorous, or if you will, more interesting and career-oriented classes. For example, a young student with significant intellectual disabilities might be mainstreamed for physical education classes, art classes and storybook time, but spend reading and mathematics classes with other students that have similar disabilities (“needs for the same level of academic instruction”). They may have access to a resource room for remediation or enhancement of course content, or for a variety of group and individual meetings and consultations.

A segregated student attends no classes with non-disabled students with disability a tested category determined before or at school entrance. He or she might attend a special school termed

residential schools that only enrolls other students with disabilities, or might be placed in a dedicated, self-contained classroom in a school that also enrolls general education students. The latter model of integration, like the 1970s Jowonio School in Syracuse, is often highly valued when combined with teaching such as Montessori education techniques. Home schooling was also a popular alternative among highly educated parents with children with significant disabilities.

Residential schools have been criticized for decades, and the government has been asked repeatedly to keep funds and services in the local districts, including for family support services for parents who may be currently single and raising a child with significant challenges on their own. Children with special needs may already be involved with early childhood education which can have a family support component emphasizing the strengths of the child and family.

Some students may be confined to a hospital due to a medical condition (e.g., cancer treatments) and are thus eligible for tutoring services provided by a school district. Less common alternatives include homeschooling and, particularly in developing countries, exclusion from education.

Legal issues: Education Law and Disability Laws

The new anti-discriminatory climate has provided the basis for much change in policy and statute, nationally and internationally. Inclusion has been enshrined at the same time that segregation and discrimination have been rejected. Articulations of the new developments in ways of thinking, in policy and in law include:

- The UN Convention on the Rights of the Child (1989) which sets out children's rights in respect of freedom from discrimination and in respect of the representation of their wishes and views.
- The Convention against Discrimination in Education of UNESCO prohibits any discrimination, exclusion or segregation in education.
- The UNESCO Salamanca Statement (1994) which calls on all governments to give the highest priority to inclusive education.
- The UN Convention on the Rights of Persons with Disabilities (2006) which calls on all States Parties to ensure an inclusive education system at all levels.

From the Least Restrictive to the Most Integrated Setting

For schools in the United States, the federal requirement that students be educated in the historic least restrictive environment that is reasonable encourages the implementation of inclusion of students previously excluded by the school system. However, a critical critique of the LRE principle, commonly used to guide US schools, indicates that it often places restrictions and segregation on the individuals with the most severe disabilities. By the late 1980s, individuals with significant disabilities and their families and caregivers were already living quality lives in homes and local communities. Luckily, the US Supreme Court has now ruled in the *Olmstead Decision* (1999) that the new principle is that of the "most integrated setting", as described by the national Consortium of Citizens with Disabilities, which should result in better achievement of national integration and inclusion goals in the 21st Century.

Inclusion Rates in The World: “Frequency of Use”

The proportion of students with disabilities who are *included* varies by place and by type of disability, but it is relatively common for students with milder disabilities and less common with certain kinds of severe disabilities. In Denmark, 99% of students with learning disabilities like ‘dyslexia’ are placed in general education classrooms. In the United States, three out of five students with learning disabilities spend the majority of their time in the general education classroom.

Postsecondary statistics (after high school) are kept by universities and government on the success rates of students entering college, and most are eligible for either disability services (e.g., accommodations and aides) or programs on college campuses, such as supported education in psychiatric disabilities or College for Living. The former are fully integrated college degree programs with college and vocational rehabilitation services (e.g., payments for textbooks, readers or translators), and the latter courses developed similar to retirement institutes (e.g., banking for retirees).

Principles of Inclusion and Necessary Resources

Although once hailed, usually by its opponents, as a way to increase achievement while decreasing costs, full inclusion does not save money, but is more cost-beneficial and cost-effective. It is not designed to reduce students’ needs, and its first priority may not even be to improve academic outcomes; in most cases, it merely moves the special education professionals (now dual certified for all students in some states) out of “their own special education” classrooms and into a corner of the general classroom or as otherwise designed by the “teacher-in-charge” and “administrator-in-charge”. To avoid harm to the academic education of students with disabilities, a full panoply of services and resources is required (of education for itself), including:

- Adequate supports and services for the student
- Well-designed individualized education programs
- Professional development for all teachers involved, general and special educators alike
- Time for teachers to plan, meet, create, and evaluate the students together
- Reduced class size based on the severity of the student needs
- Professional skill development in the areas of cooperative learning, peer tutoring, adaptive curriculum
- Collaboration between parents or guardians, teachers or para educators, specialists, administration, and outside agencies.
- Sufficient funding so that schools will be able to develop programs for students based on student need instead of the availability of funding.

Indeed, the students with special needs do receive funds from the federal government, by law originally the Educational for All Handicapped Children Act of 1974 to the present day, Individuals with Disabilities Education Improvement Act, which requires its use in the most integrated setting.

In principle, several factors can determine the success of inclusive classrooms:

- Family-school partnerships
- Collaboration between general and special educators
- Well-constructed plans that identify specific accommodations, modifications, and goals for each student
- Coordinated planning and communication between “general” and “special needs” staff
- Integrated service delivery
- Ongoing training and staff development
- Leadership of teachers and administrators

By the mid-1980s, school integration leaders in the university sector already had detailed schemas (e.g., curriculum, student days, students with severe disabilities in classrooms) with later developments primarily in assistive technology and communication, school reform and transformation, personal assistance of user-directed aides, and increasing emphasis on social relationships and cooperative learning. In 2015, most important are evaluations of the populations still in special schools, including those who may be deaf-blind, and the leadership by inclusion educators, who often do not yet go by that name, in the education and community systems.

Differing Views of Inclusion and Integration

However, early integrationists community integration would still recommend greater emphasis on programs related to sciences, the arts (e.g., exposure), curriculum integrated field trips, and literature as opposed to the sole emphasis on community referenced curriculum. For example, a global citizen studying the environment might be involved with planting a tree (“independent mobility”), or going to an arboretum (“social and relational skills”), developing a science project with a group (“contributing ideas and planning”), and having two core modules in the curriculum.

However, students will need to either continue to secondary school (meet academic testing standards), make arrangements for employment, supported education, or home/day services (transition services), and thus, develop the skills for future life (e.g., academic math skills and calculators; planning and using recipes or leisure skills) in the educational classrooms. Inclusion often involved individuals who otherwise might be at an institution or residential facility.

Today, longitudinal studies follow the outcomes of students with disabilities in classrooms, which include college graduations and quality of life outcomes. To be avoided are negative outcomes that include forms of institutionalization.

Common practices in Inclusive Classrooms

Students in an inclusive classroom are generally placed with their chronological age-mates, regardless of whether the students are working above or below the typical academic level for their age. Also, to encourage a sense of belonging, emphasis is placed on the value of friendships. Teachers often nurture a relationship between a student with special needs and a same-age student without a special educational need. Another common practice is the assignment of a buddy to accompany

a student with special needs at all times (for example in the cafeteria, on the playground, on the bus and so on). This is used to show students that a diverse group of people make up a community, that no one type of student is better than another, and to remove any barriers to a friendship that may occur if a student is viewed as “helpless.” Such practices reduce the chance for elitism among students in later grades and encourage cooperation among groups.

Teachers use a number of techniques to help build classroom communities:

- Using games designed to build community
- Involving students in solving problems
- Sharing songs and books that teach community
- Openly dealing with individual differences by discussion
- Assigning classroom jobs that build community
- Teaching students to look for ways to help each other
- Utilizing physical therapy equipment such as standing frames, so students who typically use wheelchairs can stand when the other students are standing and more actively participate in activities
- Encouraging students to take the role of teacher and deliver instruction (e.g. read a portion of a book to a student with severe disabilities)
- Focusing on the strength of a student with special needs
- Create classroom checklists
- Take breaks when necessary
- Create an area for children to calm down
- Organize student desk in groups
- Create a self and welcoming environment
- Set ground rules and stick with them
- Help establish short-term goals
- Design a multi-faced curriculum
- Communicate regular with parents and/or caregivers
- Seek support from other special education teachers

Inclusionary Practices are Commonly Utilized By Using the Following Team-teaching Models:

- One teach, one support:

In this model, the content teacher will deliver the lesson and the special education teacher will assist students individual needs and enforce classroom management as needed.

- One teach, one observe:

In this model, the teacher with the most experience in the content will deliver the lesson and the other teacher will float or observe. This model is commonly used for data retrieval during IEP observations or Functional Behavior Analysis.

- Station teaching (rotational teaching):

In this model, the room is divided into stations in which the students will visit with their small groups. Generally, the content teacher will deliver the lesson in his/her group, and the special education teacher will complete a review or adapted version of the lesson with the students.

- Parallel teaching:

In this model, one half of the class is taught by the content teacher and one half is taught by the special education teacher. Both groups are being taught the same lesson, just in a smaller group.

- Alternative teaching:

In this method, the content teacher will teach the lesson to the class, while the special education teacher will teach a small group of students an alternative lesson.

- Team teaching (content/support shared 50/50):

Both teachers share the planning, teaching, and supporting equally. This is the traditional method, and often the most successful co-teaching model.

Children With Extensive Support Needs

For children with significant or severe disabilities, the programs may require what are termed health supports (e.g., positioning and lifting; visit to the nurse clinic), direct one-to-one aide in the classroom, assistive technology, and an individualized program which may involve the student “partially” (e.g., videos and cards for “visual stimulation”; listening to responses) in the full lesson plan for the “general education student”. It may also require introduction of teaching techniques commonly used (e.g., introductions and interest in science) that teachers may not use within a common core class.

Another way to think of health supports are as a range of services that may be needed from specialists, or sometimes generalists, ranging from speech and language, to visual and hearing (sensory impairments), behavioral, learning, orthopedics, autism, deaf-blindness, and traumatic brain injury, according to Virginia Commonwealth University’s Dr. Paul Wehman. As Dr. Wehman has indicated, expectations can include post secondary education, supported employment in competitive sites, and living with family or other residential places in the community.

In 2005, comprehensive health supports were described in National Goals for Intellectual and Developmental Disabilities as universally available, affordable and promoting inclusion, as supporting well-informed, freely chose health care decisions, culturally competent, promoting health promotion, and insuring well trained and respectful health care providers. In addition, mental health, behavioral, communication and crisis needs may need to be planned for and addressed.

Collaboration Among the Professions

Inclusion settings allow children with and without disabilities to play and interact every day, even when they are receiving therapeutic services. When a child displays fine motor difficulty, his ability to fully participate in common classroom activities, such as cutting, coloring, and zipping a jacket may be hindered. While occupational therapists are often called to assess and implement strategies outside of school, it is frequently left up to classroom teachers to implement strategies in school. Collaborating with occupational therapists will help classroom teachers use intervention strategies and increase teacher's awareness about student's needs within school settings and enhance teacher's independence in implementation of occupational therapy strategies.

As a result of the 1997 re-authorization of the Individuals With Disabilities Education Act (IDEA), greater emphasis has been placed on delivery of related services within inclusive, general education environments. [Nolan, 2004] The importance of inclusive, integrated models of service delivery for children with disabilities has been widely researched indicating positive benefits. [Case-Smith & Holland, 2009] In traditional "pull out" service delivery models, children typically work in isolated settings one on one with a therapist, Case-Smith and Holland(2009) argue that children working on skills once or twice a week are "less likely to produce learning that leads to new behaviors and increased competence." [Case Smith & Holland, 2009, pg.419]. In recent years, occupational therapy has shifted from the conventional model of "pull out" therapy to an integrated model where the therapy takes place within a school or classroom.

Inclusion administrators have been requested to review their personnel to assure mental health personnel for children with mental health needs, vocational rehabilitation linkages for work placements, community linkages for special populations (e.g., "deaf-blind", "autism"), and collaboration among major community agencies for after school programs and transition to adulthood. Highly recommended are collaborations with parents, including parent-professional partnerships in areas of cultural and linguistic diversity (e.g., Syracuse University's special education Ph.D.'s Maya Kaylanpur and Beth Harry).

Selection of Students for Inclusion Programs in Schools

Educators generally say that some students with special needs are not good candidates for inclusion. Many schools expect a fully included student to be working at or near grade level, but more fundamental requirements exist: First, being included requires that the student is able to attend school. Students that are entirely excluded from school (for example, due to long-term hospitalization), or who are educated outside of schools (for example, due to enrollment in a distance education program) cannot attempt inclusion.

Additionally, some students with special needs are poor candidates for inclusion because of their effect on other students. For example, students with severe behavioral problems, such that they represent a serious physical danger to others, are poor candidates for inclusion, because the school has a duty to provide a safe environment to all students and staff.

Finally, some students are not good candidates for inclusion because the normal activities in a general education classroom will prevent them from learning. For example, a student with severe attention difficulties or extreme sensory processing disorders might be highly distracted or dis-

tressed by the presence of other students working at their desks. Inclusion needs to be appropriate to the child's unique needs.

Most students with special needs do not fall into these extreme categories, as most students do attend school, are not violent, do not have severe sensory processing disorders, etc.

The students that are most commonly included are those with physical disabilities that have no or little effect on their academic work (diabetes mellitus, epilepsy, food allergies, paralysis), students with all types of mild disabilities, and students whose disabilities require relatively few specialized services.

Bowe says that regular inclusion, but not full inclusion, is a reasonable approach for a significant majority of students with special needs. He also says that for some students, notably those with severe autism spectrum disorders or mental retardation, as well as many who are deaf or have multiple disabilities, even regular inclusion may not offer an appropriate education. Teachers of students with autism spectrum disorders sometimes use antecedent procedures, delayed contingencies, self-management strategies, peer-mediated interventions, pivotal response training and naturalistic teaching strategies.

Relationship to Progressive Education

Some advocates of inclusion promote the adoption of progressive education practices. In the progressive education or inclusive classroom, everyone is exposed to a "rich set of activities," and each student does what he or she can do, or what he or she wishes to do and learns whatever comes from that experience. Maria Montessori's schools are sometimes named as an example of inclusive education.

Inclusion requires some changes in how teachers teach, as well as changes in how students with and without special needs interact with and relate to one another. Inclusive education practices frequently rely on active learning, authentic assessment practices, applied curriculum, multi-level instructional approaches, and increased attention to diverse student needs and individualization.

Arguments for Full Inclusion in Regular Neighborhood Schools

Advocates say that even partial non-inclusion is morally unacceptable. Proponents believe that non-inclusion reduces the disabled students' social importance and that maintaining their social visibility is more important than their academic achievement. Proponents say that society accords disabled people less human dignity when they are less visible in general education classrooms. Advocates say that even if typical students are harmed academically by the full inclusion of certain special needs students, that the non-inclusion of these students would still be morally unacceptable, as advocates believe that the harm to typical students' education is always less important than the social harm caused by making people with disabilities less visible in society.

A second key argument is that everybody benefits from inclusion. Advocates say that there are many children and young people who don't fit in (or feel as though they don't), and that a school that fully includes all disabled students feels welcoming to all. Moreover, at least one author has studied the impact a diversified student body has on the general education population and has concluded that students with mental retardation who spend time among their peers show an increase in social skills and academic proficiency.

Advocates for inclusion say that the long-term effects of typical students who are included with special needs students at a very young age have a heightened sensitivity to the challenges that others face, increased empathy and compassion, and improved leadership skills, which benefits all of society.

A combination of inclusion and pull-out (partial inclusion) services has been shown to be beneficial to students with learning disabilities in the area of reading comprehension, and preferential for the special education teachers delivering the services.

Inclusive education can be beneficial to all students in a class, not just students with special needs. Some research shows that inclusion helps students understand the importance of working together, and fosters a sense of tolerance and empathy among the student body.

Positive Effects of Inclusion in Regular Classrooms

There are many positive effects of inclusions where both the students with special needs along with the other students in the classroom both benefit. Research has shown positive effects for children with disabilities in areas such as reaching individualized education program (IEP) goal, improving communication and social skills, increasing positive peer interactions, many educational outcomes, and post school adjustments. Positive effects on children without disabilities include the development of positive attitudes and perceptions of persons with disabilities and the enhancement of social status with non-disabled peers. Several studies have been done on the effects of inclusion of children with disabilities in general education classrooms. A study on inclusion compared integrated and segregated (special education only) preschool students. The study determined that children in the integrated sites progressed in social skills development while the segregated children actually regressed. Another study shows the effect on inclusion in grades 2 to 5. The study determined that students with specific learning disabilities made some academic and affective gains at a pace comparable to that of normal achieving students. Specific learning disabilities students also showed an improvement in self-esteem and in some cases improved motivation.

A third study shows how the support of peers in an inclusive classroom can lead to positive effects for children with autism. The study observed typical inclusion classrooms, ages ranging from 7 years old to 11 years old. The peers were trained on an intervention technique to help their fellow autistic classmates stay on task and focused. The study showed that using peers to intervene instead of classroom teachers helped students with autism reduce off-task behaviors significantly. It also showed that the typical students accepted the student with autism both before and after the intervention techniques were introduced.

Criticisms of Inclusion Programs of School Districts

Critics of full and partial inclusion include educators, administrators and parents. Full and partial inclusion approaches neglect to acknowledge the fact most students with significant special needs require individualized instruction or highly controlled environments. Thus, general education classroom teachers often are teaching a curriculum while the special education teacher is remediating instruction at the same time. Similarly, a child with serious inattention problems may be unable to focus in a classroom that contains twenty or more active children. Although with the

increase of incidence of disabilities in the student population, this is a circumstance all teachers must contend with, and is not a direct result of inclusion as a concept.

Full inclusion may be a way for schools to placate parents and the general public, using the word as a phrase to garner attention for what are in fact illusive efforts to educate students with special needs in the general education environment.

At least one study examined the lack of individualized services provided for students with IEPs when placed in an inclusive rather than mainstreamed environment.

Some researchers have maintained school districts neglect to prepare general education staff for students with special needs, thus preventing any achievement. Moreover, school districts often expound an inclusive philosophy for political reasons, and do away with any valuable pull-out services, all on behalf of the students who have no say in the matter.

Inclusion is viewed by some as a practice philosophically attractive yet impractical. Studies have not corroborated the proposed advantages of full or partial inclusion. Moreover, “push in” servicing does not allow students with moderate to severe disabilities individualized instruction in a resource room, from which many show considerable benefit in both learning and emotional development.

Parents of disabled students may be cautious about placing their children in an inclusion program because of fears that the children will be ridiculed by other students, or be unable to develop regular life skills in an academic classroom.

Some argue that inclusive schools are not a cost-effective response when compared to cheaper or more effective interventions, such as special education. They argue that special education helps “fix” the special needs students by providing individualized and personalized instruction to meet their unique needs. This is to help students with special needs adjust as quickly as possible to the mainstream of the school and community. Proponents counter that students with special needs are not fully into the mainstream of student life because they are secluded to special education. Some argue that isolating students with special needs may lower their self-esteem and may reduce their ability to deal with other people. In keeping these students in separate classrooms they aren’t going to see the struggles and achievements that they can make together. However, at least one study indicated mainstreaming in education has long-term benefits for students as indicated by increased test scores, where the benefit of inclusion has not yet been proved.

Broader Approach: Social and Cultural Inclusion

As used by UNESCO, inclusion refers to far more than students with special educational needs. It is centered on the inclusion of marginalized groups, such as religious, racial, ethnic, and linguistic minorities, immigrants, girls, the poor, students with disabilities, HIV/AIDS patients, remote populations, and more. In some places, these people are not actively included in education and learning processes. In the U.S. this broader definition is also known as “culturally responsive” education, which differs from the 1980s-1990s cultural diversity and cultural competency approaches, and is promoted among the ten equity assistance centers of the U.S. Department of Education, for example in Region IX (AZ, CA, NV), by the Equity Alliance at ASU. Gloria Ladson-Billings points out that teachers who are culturally responsive know how to base learning experiences on the

cultural realities of the child (e.g. home life, community experiences, language background, belief systems). Proponents argue that culturally responsive pedagogy is good for all students because it builds a caring community where everyone's experiences and abilities are valued.

Proponents want to maximize the participation of all learners in the community schools of their choice and to rethink and restructure policies, curricula, cultures and practices in schools and learning environments so that diverse learning needs can be met, whatever the origin or nature of those needs. They say that all students can learn and benefit from education, and that schools should adapt to the physical, social, and cultural needs of students, rather than students adapting to the needs of the school. Proponents believe that individual differences between students are a source of richness and diversity, which should be supported through a wide and flexible range of responses. The challenge of rethinking and restructuring schools to become more culturally responsive calls for a complex systems view of the educational system, where one can extend the idea of strength through diversity to all participants in the educational system (e.g. parents, teachers, community members, staff).

Although inclusion is generally associated with elementary and secondary education, it is also applicable in postsecondary education. According to UNESCO, inclusion "is increasingly understood more broadly as a reform that supports and welcomes diversity amongst all learners." Under this broader definition of inclusion, steps should also be taken to eliminate discrimination and provide accommodations for all students who are at a disadvantage because of some reason other than disability.

Benefiting in an Inclusive Environment

"The inclusion of age-appropriate students in a general education classroom, alongside those with and without disability is beneficial to both parties involved. (Waitoller and Thorius) With inclusive education, all students are exposed to the same curriculum, they develop their own individual potential, and participate in the same activities at the same time. Therefore, there is a variety of ways in which learning takes place because students learn differently, at their own pace and by their own style. (Carter, Moss, Asmus, Fesperman, Cooney, Brock, Lyons, Huber, and Vincent) Effectively, inclusive education provides a nurturing venue where teaching and learning should occur despite pros and cons. It is evident that students with disabilities benefit more in an inclusive atmosphere because they can receive help from their peers with diverse abilities and they compete at the same level due to equal opportunities given."

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Methods of Education

Teaching methods are always improving with focus on enhancing learning, breaking monotony and introducing creativity in the learning process. This content touches upon methods such as storytelling, training, co-teaching and research. The topic of factory model school is included in this section to illustrate the direct teaching method. This chapter elucidates the crucial theories and principles of education.

Storytelling



The Boyhood of Raleigh by Sir John Everett Millais, oil on canvas, 1870.

A seafarer tells the young Sir Walter Raleigh and his brother the story of what happened out at sea

Storytelling is the social and cultural activity of sharing stories, often with improvisation, theatrics, or embellishment. Stories or narratives have been shared in every culture as a means of entertainment, education, cultural preservation and instilling moral values. Crucial elements of stories and storytelling include plot, characters and narrative point of view. The term 'storytelling' is used in a narrow sense to refer specifically to oral storytelling and also in a looser sense to refer to techniques used in other media to unfold or disclose the narrative of a story.

Historical Perspective

Storytelling predates writing, with the earliest forms of storytelling usually oral combined with gestures and expressions. In addition to being part of religious rituals, some archaeologists believe rock art may have served as a form of storytelling for many ancient cultures. The Australian aboriginal people painted symbols from stories on cave walls as a means of helping the storyteller remember the story. The story was then told using a combination of oral narrative, music, rock art

and dance, which bring understanding and meaning of human existence through remembrance and enactment of stories. People have used the carved trunks of living trees and ephemeral media (such as sand and leaves) to record stories in pictures or with writing. Complex forms of tattooing may also represent stories, with information about genealogy, affiliation and social status.



A very fine par dated 1938 A.D. The epic of Pabuji is an oral epic in the Rajasthani language that tells of the deeds of the folk hero-deity Pabuji, who lived in the 14th century.

With the advent of writing and the use of stable, portable media, stories were recorded, transcribed and shared over wide regions of the world. Stories have been carved, scratched, painted, printed or inked onto wood or bamboo, ivory and other bones, pottery, clay tablets, stone, palm-leaf books, skins (parchment), bark cloth, paper, silk, canvas and other textiles, recorded on film and stored electronically in digital form. Oral stories continue to be created, improvisationally by impromptu storytellers, as well as committed to memory and passed from generation to generation, despite the increasing popularity of written and televised media in much of the world.

Contemporary Storytelling

Modern storytelling has a broad purview. In addition to its traditional forms (fairytales, folktales, mythology, legends, fables etc.), it has extended itself to representing history, personal narrative, political commentary and evolving cultural norms. Contemporary storytelling is also widely used to address educational objectives. New forms of media are creating new ways for people to record, express and consume stories. Tools for asynchronous group communication can provide an environment for individuals to reframe or recast individual stories into group stories. Games and other digital platforms, such as those used in interactive fiction or interactive storytelling, may be used to position the user as a character within a bigger world. Documentaries, including interactive web documentaries, employ storytelling narrative techniques to communicate information about their topic. Self-revelatory stories, created for their cathartic and therapeutic effect, are growing in their use and application, as in Psychodrama, Drama Therapy and Playback Theatre.

Oral Traditions

Albert Bates Lord examined oral narratives from field transcripts of Yugoslav oral bards collected by Milman Parry in the 1930s, and the texts of epics such as the *Odyssey* and *Beowulf*. Lord found that a large part of the stories consisted of text which was improvised during the telling process.

Lord identified two types of *story vocabulary*. The first he called “formulas”: “rosy-fingered dawn”, “the wine-dark sea” and other specific set phrases had long been known of in Homer and other oral

epics. Lord, however, discovered that across many story traditions, fully 90% of an oral epic is assembled from lines which are repeated verbatim or which use one-for-one word substitutions. In other words, oral stories are built out of set phrases which have been stockpiled from a lifetime of hearing and telling stories.



An African storyteller in Parc des Buttes Chaumont, Paris, France.

The other type of story vocabulary is theme, a set sequence of story actions that structure a tale. Just as the teller of tales proceeds line-by-line using formulas, so he proceeds from event-to-event using themes. One near-universal theme is repetition, as evidenced in Western folklore with the “rule of three”: three brothers set out, three attempts are made, three riddles are asked. A theme can be as simple as a specific set sequence describing the arming of a hero, starting with shirt and trousers and ending with headdress and weapons. A theme can be large enough to be a plot component. For example: a hero proposes a journey to a dangerous place / he disguises himself / his disguise fools everybody / except for a common person of little account (a crone, a tavern maid or a woodcutter) / who immediately recognizes him / the commoner becomes the hero’s ally, showing unexpected resources of skill or initiative. A theme does not belong to a specific story, but may be found with minor variation in many different stories. Themes may be no more than handy prefabricated parts for constructing a tale, or they may represent universal truths – ritual-based, religious truths, as James Frazer saw in *The Golden Bough*, or archetypal, psychological truths, as Joseph Campbell describes in *The Hero With a Thousand Faces*.

The story was described by Reynolds Price, when he wrote:

A need to tell and hear stories is essential to the species *Homo sapiens* – second in necessity apparently after nourishment and before love and shelter. Millions survive without love or home, almost none in silence; the opposite of silence leads quickly to narrative, and the sound of story is the dominant sound of our lives, from the small accounts of our day’s events to the vast incommunicable constructs of psychopaths.

Märchen and Sagen

Folklorists sometimes divide oral tales into two main groups: *Märchen* and *Sagen*. These are German terms for which there are no exact English equivalents, however we have approximations:

Märchen, loosely translated as “fairy tale(s)” (lit. little stories), take place in a kind of separate “once-upon-a-time” world of nowhere-in-particular, at an indeterminate time in the past. They are clearly not intended to be understood as true. The stories are full of clearly defined incidents, and peopled by rather flat characters with little or no interior life. When the supernatural occurs, it is

presented matter-of-factly, without surprise. Indeed, there is very little effect, generally; bloodcurdling events may take place, but with little call for emotional response from the listener.

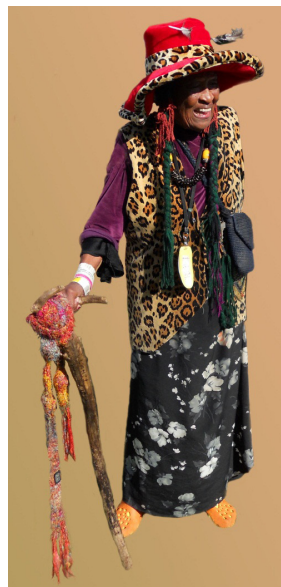


Illustration from Silesian Folk Tales (The Book of Rubezahl)

Sagen, best translated as “legends”, are supposed to have actually happened, very often at a particular time and place, and they draw much of their power from this fact. When the supernatural intrudes (as it often does), it does so in an emotionally fraught manner. Ghost and lovers’ leap stories belong in this category, as do many UFO stories and stories of supernatural beings and events.

Another important examination of orality in human life is Walter J. Ong’s *Orality and Literacy: The Technologizing of the Word* (1982). Ong studies the distinguishing characteristics of oral traditions, how oral and written cultures interact and condition one another, and how they ultimately influence human epistemology.

Storytelling and Learning



Orunamamu storyteller, griot with cane

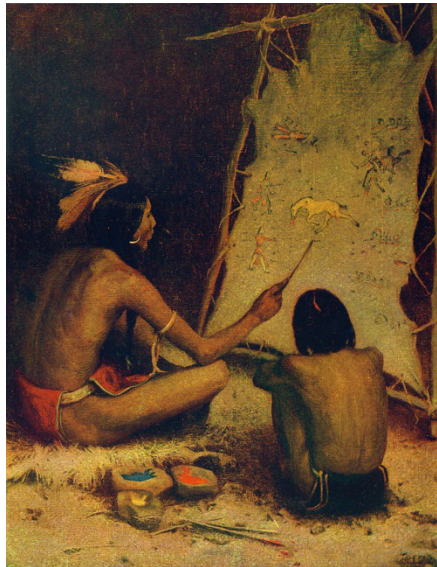
Storytelling is a means for sharing and interpreting experiences. Peter L. Berger says human life is narratively rooted, humans construct their lives and shape their world into homes in terms of these groundings and memories. Stories are universal in that they can bridge cultural, linguistic and age-related divides. Storytelling can be adaptive for all ages, leaving out the notion of age segregation. Storytelling can be used as a method to teach ethics, values and cultural norms and differences. Learning is most effective when it takes place in social environments that provide authentic social cues about how knowledge is to be applied. Stories function as a tool to pass on knowledge in a social context. So, every story has 3 parts. First, The setup (The Hero's world before the adventure starts). Second, The Confrontation (The hero's world turned upside down). Third, The Resolution (Hero conquer's villain, but it's not enough for Hero to survive. The Hero or World must be transformed). Any story can be framed in such format.

Human knowledge is based on stories and the human brain consists of cognitive machinery necessary to understand, remember and tell stories. Humans are storytelling organisms that both individually and socially, lead storied lives. Stories mirror human thought as humans think in narrative structures and most often remember facts in story form. Facts can be understood as smaller versions of a larger story, thus storytelling can supplement analytical thinking. Because storytelling requires auditory and visual senses from listeners, one can learn to organize their mental representation of a story, recognize structure of language and express his or her thoughts.

Stories tend to be based on experiential learning, but learning from an experience is not automatic. Often a person needs to attempt to tell the story of that experience before realizing its value. In this case, it is not only the listener who learns, but the teller who also becomes aware of his or her own unique experiences and background. This process of storytelling is empowering as the teller effectively conveys ideas and, with practice, is able to demonstrate the potential of human accomplishment. Storytelling taps into existing knowledge and creates bridges both culturally and motivationally toward a solution.

Stories are effective educational tools because listeners become engaged and therefore remember. Storytelling can be seen as a foundation for learning and teaching. While the storylistener is engaged, they are able to imagine new perspectives, inviting a transformative and empathetic experience. This involves allowing the individual to actively engage in the story as well as observe, listen and participate with minimal guidance. Listening to a storyteller can create lasting personal connections, promote innovative problem solving and foster a shared understanding regarding future ambitions. The listener can then activate knowledge and imagine new possibilities. Together a storyteller and listener can seek best practices and invent new solutions. Because stories often have multiple layers of meanings, listeners have to listen closely to identify the underlying knowledge in the story. Storytelling is used as a tool to teach children the importance of respect through the practice of listening. As well as connecting children with their environment, through the theme of the stories, and give them more autonomy by using repetitive statements, which improve their learning to learn competence. It is also used to teach children to have respect for all life, value inter-connectedness and always work to overcome adversity. To teach this a Kinesthetic learningstyle would be used, involving the listeners through music, dream interpretation, or dance.

Storytelling in Indigenous Cultures



The Historian” - The Indian Artist is painting in sign language, on buckskin, the story of a battle with American Soldiers.

For indigenous cultures of the Americas, storytelling is used as an oral form of language associated with practices and values essential to developing one’s identity. This is because everyone in the community can add their own touch and perspective to the narrative collaboratively - both individual and culturally shared perspectives have a place in the co-creation of the story. Oral storytelling in indigenous communities differs from other forms of stories because they are told not only for entertainment, but for teaching values. For example, the Sto:lo community in Canada focuses on reinforcing children’s identity by telling stories about the land to explain their roles.

Furthermore, Storytelling is a way to teach younger members of indigenous communities about their culture and their identities. In Donna Eder’s study, Navajos were interviewed about storytelling practices that they have had in the past and what changes they want to see in the future. They notice that storytelling makes an impact on the lives of the children of the Navajos. According to some of the Navajos that were interviewed, storytelling is one of many main practices that teaches children the important principles to live a good life. In indigenous communities, stories are a way to pass knowledge on from generation to generation.

For some indigenous people, experience has no separation between the physical world and the spiritual world. Thus, some indigenous people communicate to their children through ritual, storytelling, or dialogue. Community values, learned through storytelling, help to guide future generations and aid in identity formation.

In the Quechua community of Highland Peru, there is no separation between adults and children. This allows for children to learn storytelling through their own interpretations of the given story. Therefore, children in the Quechua community are encouraged to listen to the story that is being told in order to learn about their identity and culture. Sometimes, children are expected to sit quietly and listen actively. This enables them to engage in activities as independent learners.

This teaching practice of storytelling allowed children to formulate ideas based on their own experiences and perspectives. In Navajo communities, for children and adults, storytelling is one of the many effective ways to educate both the young and old about their cultures, identities and history. Storytelling help the Navajos know who they are, where they come from and where they belong.

Storytelling in indigenous cultures is sometimes passed on by oral means in a quiet and relaxing environment, which usually coincides with family or tribal community gatherings and official events such as family occasions, rituals, or ceremonial practices. During the telling of the story, children may act as participants by asking questions, acting out the story, or telling smaller parts of the story. Furthermore, stories are not often told in the same manner twice, resulting in many variations of a single myth. This is because narrators may choose to insert new elements into old stories dependent upon the relationship between the storyteller and the audience, making the story correspond to each unique situation.

Indigenous cultures also use instructional ribbing— a playful form of correcting children’s undesirable behavior— in their stories. For example, the Ojibwe (or Chippewa) tribe uses the tale of an owl snatching away misbehaving children. The caregiver will often say, “The owl will come and stick you in his ears if you don’t stop crying!” Thus, this form of teasing serves as a tool to correct inappropriate behavior and promote cooperation.

Types of Storytelling in Indigenous Peoples

There are various types of stories among many indigenous communities. Communication in Indigenous American communities is rich with stories, myths, philosophies and narratives that serve as a means to exchange information. These stories may be used for coming of age themes, core values, morality, literacy and history. Very often, the stories are used to instruct and teach children about cultural values and lessons. The meaning within the stories is not always explicit, and children are expected to make their own meaning of the stories. In the Lakota Tribe of North America, for example, young girls are often told the story of the White Buffalo Calf Woman, who is a spiritual figure that protects young girls from the whims of men. In the Odawa Tribe, young boys are often told the story of a young man who never took care of his body, and as a result, his feet fail to run when he tries to escape predators. This story serves as an indirect means of encouraging the young boys to take care of their bodies.

Narratives can be shared to express the values or morals among family, relatives, or people who are considered part of the close-knit community. Many stories in indigenous American communities all have a “surface” story, that entails knowing certain information and clues to unlocking the metaphors in the story. The underlying message of the story being told, can be understood and interpreted with clues that hint to a certain interpretation. In order to make meaning from these stories, elders in the Sto:Lo community for example, emphasize the importance in learning how to listen, since it requires the senses to bring one’s heart and mind together. For instance, a way in which children learn about the metaphors significant for the society they live in, is by listening to their elders and participating in rituals where they respect one another.

Some people also make a case for different narrative forms being classified as storytelling in the contemporary world. For example, digital storytelling, online and dice-and-paper-based role-playing games. In traditional role-playing games, storytelling is done by the person who controls the

environment and the non playing fictional characters, and moves the story elements along for the players as they interact with the storyteller. The game is advanced by mainly verbal interactions, with dice roll determining random events in the fictional universe, where the players interact with each other and the storyteller. This type of game has many genres, such as sci-fi and fantasy, as well as alternate-reality worlds based on the current reality, but with different setting and beings such as werewolves, aliens, daemons, or hidden societies. These oral-based role-playing games were very popular in the 1990s among circles of youth in many countries before computer and console-based online MMORPG's took their place. Despite the prevalence of computer-based MMORPGs, the dice-and-paper RPG still has a dedicated following.

Passing on of Values in Indigenous Cultures

Stories in indigenous cultures encompass a variety of values. These values include an emphasis on individual responsibility, concern for the environment and communal welfare.

Stories are based on values passed down by older generations to shape the foundation of the community. Storytelling is used as a bridge for knowledge and understanding allowing the values of “self” and “community” to connect and be learned as a whole. Storytelling in the Navajo community for example allows for community values to be learned at different times and places for different learners. Stories are told from the perspective of other people, animals, or the natural elements of the earth. In this way, children learn to value their place in the world as a person in relation to others. Typically, stories are used as an informal learning tool in Indigenous American communities, and can act as an alternative method for reprimanding children's bad behavior. In this way, stories are non-confrontational, which allows the child to discover for themselves what they did wrong and what they can do to adjust the behavior.

Parents in the Arizona Tewa community, for example, teach morals to their children through traditional narratives. Lessons focus on several topics including historical or “sacred” stories or more domestic disputes. Through storytelling, the Tewa community emphasizes the traditional wisdom of the ancestors and the importance of collective as well as individual identities. Indigenous communities teach children valuable skills and morals through the actions of good or mischievous stock characters while also allowing room for children to make meaning for themselves. By not being given every element of the story, children rely on their own experiences and not formal teaching from adults to fill in the gaps.

When children listen to stories, they periodically vocalize their ongoing attention and accept the extended turn of the storyteller. The emphasis on attentiveness to surrounding events and the importance of oral tradition in indigenous communities teaches children the skill of keen attention. For example, Children of the Tohono O'odham American Indian community who engaged in more cultural practices were able to recall the events in a verbally presented story better than those who did not engage in cultural practices. Body movements and gestures help to communicate values and keep stories alive for future generations. Elders, parents and grandparents are typically involved in teaching the children the cultural ways, along with history, community values and teachings of the land.

Children in indigenous communities can also learn from the underlying message of a story. For example, in a nahuatl community near Mexico City, stories about ahuaques or hostile

water dwelling spirits that guard over the bodies of water, contain morals about respecting the environment. If the protagonist of a story, who has accidentally broken something that belongs to the ahuaque, does not replace it or give back in some way to the ahuaque, the protagonist dies. In this way, storytelling serves as a way to teach what the community values, such as valuing the environment.

Storytelling also serves to deliver a particular message during spiritual and ceremonial functions. In the ceremonial use of storytelling, the unity building theme of the message becomes more important than the time, place and characters of the message. Once the message is delivered, the story is finished. As cycles of the tale are told and retold, story units can recombine, showing various outcomes for a person's actions.

Storytelling Research

Storytelling has been assessed for critical literacy skills and the learning of theatre-related terms by the nationally recognized storytelling and creative drama organization, Neighborhood Bridges, in Minneapolis. They are at the forefront of storytelling-drama research in schools. Another storyteller researcher in the UK proposes that the social space created preceding oral storytelling in schools may trigger sharing (Parfitt, 2014).

Storytelling has also been studied as a way to investigate and archive cultural knowledge and values within indigenous American communities. Iseke's study (2013) on the role of storytelling in the Metis community, showed promise in furthering research about the Metis and their shared communal atmosphere during storytelling events. Iseke focused on the idea of witnessing a storyteller as a vital way to share and partake in the Metis community, as members of the community would stop everything else they were doing in order to listen or "witness" the storyteller and allow the story to become a "ceremonial landscape," or shared reference, for everyone present. This was a powerful tool for the community to engage and teach new learner shared references for the values and ideologies of the Metis. Through storytelling, the Metis cemented the shared reference of personal or popular stories and folklore, which members of the community can use to share ideologies. In the future, Iseke noted that Metis elders wished for the stories being told to be used for further research into their culture, as stories were a traditional way to pass down vital knowledge to younger generations.

Storytelling as a Political Praxis

Some approaches treat narratives as politically motivated stories, stories empowering certain groups and stories giving people agency. Instead of just searching for the main point of the narrative, the political function is demanded through asking, "Whose interest does a personal narrative serve"? This approach mainly looks at the power, authority, knowledge, ideology and identity; "whether it legitimates and dominates or resists and empowers". All personal narratives are seen as ideological because they evolve from a structure of power relations and simultaneously produce, maintain and reproduce that power structure".

Political theorist, Hannah Arendt argues that storytelling transforms private meaning to public meaning. Regardless of the gender of the narrator and what story they are sharing, the performance of the narrative and the audience listening to it is where the power lies.

Therapeutic Storytelling

Therapeutic storytelling is the act of telling one's story in an attempt to better understand oneself or one's situation. Oftentimes, these stories affect the audience in a therapeutic sense as well, helping them to view situations similar to their own through a different lens. Noted author and folklore scholar, Elaine Lawless states, "...this process provides new avenues for understanding and identity formation. Language is utilised to bear witness to their lives". Sometimes a narrator will simply skip over certain details without realising, only to include it in their stories during a later telling. In this way, that telling and retelling of the narrative serves to "reattach portions of the narrative". These gaps may occur due to a repression of the trauma or even just a want to keep the most gruesome details private. Regardless, these silences are not as empty as they appear, and it is only this act of storytelling that can enable the teller to fill them back in.

Psychodrama uses re-enactment of a personal, traumatic event in the life of a psychodrama group participant as a therapeutic methodology, first developed by psychiatrist, J.L. Moreno, M.D. This therapeutic use of storytelling was incorporated into Drama Therapy, known in the field as "Self Revalatory Theater." in 1975] Jonathan Fox and Jo Salas developed a therapeutic, improvisational storytelling form they called Playback Theatre.

Storytelling as Art Form

Aesthetics

The art of narrative is, by definition, an aesthetic enterprise, and there are a number of artistic elements that typically interact in well-developed stories. Such elements include the essential idea of narrative structure with identifiable beginnings, middles, and endings, or exposition-development-climax-resolution-denouement, normally constructed into coherent plot lines; a strong focus on temporality, which includes retention of the past, attention to present action and protention/future anticipation; a substantial focus on characters and characterization which is "arguably the most important single component of the novel"; a given heterogloss of different voices dialogically at play – "the sound of the human voice, or many voices, speaking in a variety of accents, rhythms and registers"; possesses a narrator or narrator-like voice, which by definition "addresses" and "interacts with" reading audiences; communicates with a Wayne Booth-esque rhetorical thrust, a dialectic process of interpretation, which is at times beneath the surface, conditioning a plotted narrative, and at other times much more visible, "arguing" for and against various positions; relies substantially on now-standard aesthetic figuration, particularly including the use of metaphor, metonymy, synecdoche and irony; is often enmeshed in intertextuality, with copious connections, references, allusions, similarities, parallels, etc. to other literatures; and commonly demonstrates an effort toward *bildungsroman*, a description of identity development with an effort to evince *becoming* in character and community.

Festivals

Storytelling festivals feature the work of several storytellers. Elements of the oral storytelling art form include visualization (the seeing of images in the mind's eye), and vocal and bodily gestures. In many ways, the art of storytelling draws upon other art forms such as acting, oral interpretation and performance studies.

Several storytelling organizations started in the U.S. during the 1970s. One such organization was the National Association for the Perpetuation and Preservation of Storytelling (NAPPS), now the National Storytelling Network (NSN) and the International Storytelling Center (ISC). NSN is a professional organization that helps to organize resources for tellers and festival planners. The ISC runs the National Storytelling Festival in Jonesborough, TN. Australia followed their American counterparts with the establishment of storytelling guilds in the late 1970s. Australian storytelling today has individuals and groups across the country who meet to share their stories. The UK's Society for Storytelling was founded in 1993, bringing together tellers and listeners, and each year since 2000 has run a National Storytelling Week the first week of February.

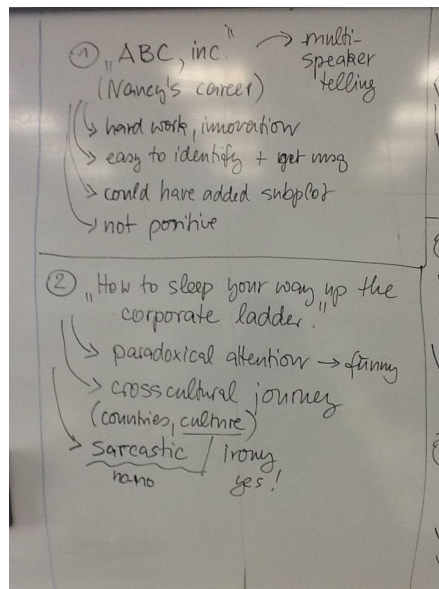
Currently, there are dozens of storytelling festivals and hundreds of professional storytellers around the world, and an international celebration of the art occurs on World Storytelling Day.

Emancipation of the Story

In oral traditions, stories are kept alive by being told again and again. The material of any given story naturally undergoes several changes and adaptations during this process. When and where oral tradition was pushed back in favor of print media, the literary idea of the author as originator of a story's authoritative version changed people's perception of stories themselves. In centuries following, stories tended to be seen as the work of individuals rather than a collective effort. Only recently when a significant number of influential authors began questioning their own roles, the value of stories as such – independent of authorship – was again recognized. Literary critics such as Roland Barthes even proclaimed the Death of the Author.

In business

Within the Workplace



Storytelling practice example (Summer School Berlin School of Economics 2013, European Business and Economics (EBEP))

For many multi-media communication complex institutions, communicating by using storytelling techniques can be a more compelling and effective route of delivering information than that of using only dry facts. Uses include:

Using Narrative to Manage Conflicts

For managers storytelling is an important way of resolving conflicts, addressing issues and facing challenges. Managers may use narrative discourse to deal with conflicts when direct action is inadvisable or impossible.

Using Narrative to Interpret the Past and Shape the Future

In a group discussion a process of collective narration can help to influence others and unify the group by linking the past to the future. In such discussions, managers transform problems, requests and issues into stories. Jameson calls this collective group construction storybuilding.

Using Narrative in the Reasoning Process

Storytelling plays an important role in reasoning processes and in convincing others. In meetings, the managers preferred stories to abstract arguments or statistical measures. When situations are complex, narrative allows the managers to involve more context.

In marketing

Storytelling is increasingly used in advertising today in order to build customer loyalty. According to Giles Lury, this marketing trend echoes the deeply rooted need of all humans to be entertained. Stories are illustrative, easily memorable and allow any firm to create stronger emotional bonds with the customers.

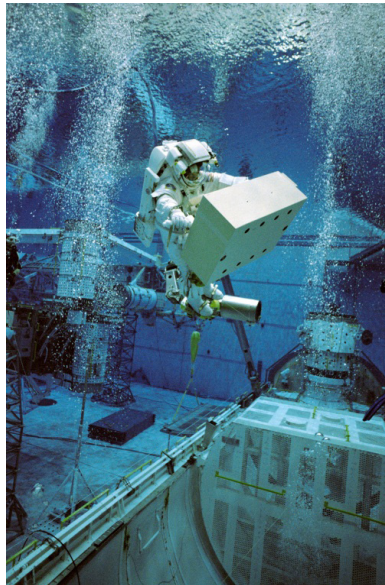
A Nielsen study shows consumers want a more personal connection in the way they gather information. Our brains are far more engaged by storytelling than by cold, hard facts. When reading straight data, only the language parts of our brains work to decode the meaning. But when we read a story, not only do the language parts of our brains light up, but any other part of the brain that we would use if we were actually experiencing what we're reading about becomes activated as well. This means it's far easier for us to remember stories than hard facts.

Developments include the use of trans-media techniques, originating in the film industry which Build a world in which your story can evolve. Examples include Coca-Cola's "Happiness Factory".

Training

Training is teaching, or developing in oneself or others, any skills and knowledge that relate to specific useful competencies. Training has specific goals of improving one's capability, capacity, productivity and performance. It forms the core of apprenticeships and provides the backbone of content at institutes of technology (also known as technical colleges or polytechnics). In addition to the basic training required for a trade, occupation or profession, observers of the labor-market

recognize as of 2008 the need to continue training beyond initial qualifications: to maintain, upgrade and update skills throughout working life. People within many professions and occupations may refer to this sort of training as professional development.



An astronaut in training for an extra-vehicular activity mission using an underwater simulation environment.

Types



Mountaineering training in Estonia. It involves both instruction and physical exercise in the outdoor environment to develop skills that are necessary for survival in rock climbing.

Physical Training

Physical training concentrates on mechanistic goals: training-programs in this area develop specific skills or muscles, often with a view of peaking at a particular time. Some physical training programs focus on raising overall physical fitness.

In military use, training means gaining the physical ability to perform and survive in combat, and learning the many skills needed in a time of war. These include how to use a variety of weapons, outdoor survival skills, and how to survive being captured by the enemy, among many others.

For psychological or physiological reasons, people who believe it may be beneficial to them can choose to practice relaxation training, or autogenic training, in an attempt to increase their ability to relax or deal with stress. While some studies have indicated relaxation training is useful for some medical conditions, autogenic training has limited results or has been the result of few studies.

On Job Training



Computer skills training

Some commentators use a similar term for workplace learning to improve performance: “training and development”. There are also additional services available online for those who wish to receive training above and beyond that which is offered by their employers. Some examples of these services include career counseling, skill assessment, and supportive services. One can generally categorize such training as *on-the-job* or *off-the-job*.

The on-the-job training method takes place in a normal working situation, using the actual tools, equipment, documents or materials that trainees will use when fully trained. On-the-job training has a general reputation as most effective for vocational work. It involves employee training at the place of work while he or she is doing the actual job. Usually a professional trainer (or sometimes an experienced employee) serves as the course instructor using hands-on training often supported by formal classroom training. Sometimes training can occur by using web based technology or video conferencing tools.

Simulation based training is another method which uses technology to assist in trainee development. This is particularly common in the training of skills requiring a very high degree of practice, and in those which include a significant responsibility for life and property. An advantage is that simulation training allows the trainer to find, study, and remedy skill deficiencies in their trainees in a controlled, virtual environment. This also allows the trainees an opportunity to experience and study events that would otherwise be rare on the job, e.g., in-flight emergencies, system failure, etc., wherein the trainer can run ‘scenarios’ and study how the trainee reacts, thus assisting in improving his/her skills if the event was to occur in the real world. Examples of skills that commonly include simulator training during stages of development include piloting aircraft, spacecraft, loco-

motives, and ships, operating air traffic control airspace/sectors, power plant operations training, advanced military/defense system training, and advanced emergency response training.

Off-the-job training method takes place away from normal work situations — implying that the employee does not count as a directly productive worker while such training takes place. Off-the-job training method also involves employee training at a site away from the actual work environment. It often utilizes lectures, case studies, role playing and simulation, having the advantage of allowing people to get away from work and concentrate more thoroughly on the training itself. This type of training has proven more effective in inculcating concepts and ideas. Many personnel selection companies offer a service which would help to improve employee competences and change the attitude towards job. The internal personnel training topics can vary from effective problem solving skills to leadership training.

- A more recent development in job training is the On the Job Training Plan, or OJT Plan. According to the United States Department of the Interior, a proper OJT plan should include: An overview of the subjects to be covered, the number of hours the training is expected to take, an estimated completion date, and a method by which the training will be evaluated.

Religion and Spirituality

In religious and spiritual use, training may refer to the purification of the mind, heart, understanding and actions to obtain a variety of spiritual goals such as (for example) closeness to God or freedom from suffering. Note for example the institutionalized spiritual training of Threefold Training in Buddhism, Meditation in Hinduism or discipleship in Christianity. These aspects of training can be short term or last a lifetime, depending on the context of the training and which religious group it is a part of.

Organizational Training

Organizations use training in order to achieve human resources desired levels of skills, motivation and decision making ability. Operational training develops, maintains or improves the operational readiness of individuals or units, while strategic training planning involves the practice of focusing on upcoming challenges that can determine the possibility of a skills-gap, and design specific training interventions on groups, individuals, teams or leaders.

Parochial Schools

Parochial schools are a fairly widespread institution in the United States. A parochial school is a primary or secondary school supervised by a religious organization, especially a Roman Catholic day school affiliated with a parish or a holy order. As of 2004, out of the approximately 50 million children who were enrolled in American grade schools, 4.2 million children attend a church-affiliated school, which is approximately 1 in 12 students. Within the Christian religion, for example, one can attend a church-affiliated college with the intent of getting a degree in a field associated with religious studies. Some people may also attend church-affiliated colleges in pursuit of a non-religious degree, and typically do it just to deepen their understanding of the specific religion

that the school is associated with. The largest non-public school system in the United States, the Catholic school system, operates 5,744 elementary schools and 1,206 secondary schools.

Artificial-intelligence Feedback

Researchers have developed training-methods for artificial-intelligence devices as well. Evolutionary algorithms, including genetic programming and other methods of machine learning, use a system of feedback based on “fitness functions” to allow computer programs to determine how well an entity performs a task. The methods construct a series of programs, known as a “population” of programs, and then automatically test them for “fitness”, observing how well they perform the intended task. The system automatically generates new programs based on members of the population that perform the best. These new members replace programs that perform the worst. The procedure repeats until the achievement of optimum performance. In robotics, such a system can continue to run in real-time after initial training, allowing robots to adapt to new situations and to changes in themselves, for example, due to wear or damage. Researchers have also developed robots that can appear to mimic simple human behavior as a starting point for training.

Co-teaching

Co-teaching is when two educators work together to plan, organize, instruct and make assessments on the same group of students, sharing the same classroom. This approach can be seen in several ways. Teacher candidates who are learning to become teachers are asked to co-teach with experienced associate teachers, whereby the classroom responsibilities are shared, and the teacher candidate can learn from the associate teacher. Regular classroom teachers and special education teachers can be paired in co-teaching relationships to benefit inclusion of students with special needs.

Recently, in Ontario the Full-Day Early Learning Kindergarten Program has been implemented where an Ontario Certified Teacher and a Registered Early Childhood Educator co-teach in a kindergarten classroom.

To evaluate the effectiveness of co-teaching, partnerships can use the Magiera-Simmons Quality Indicator Model of Co-Teaching, which gives standard definitions for co-teaching skills through 25 quality indicators and a rating scale. Co-teaching is often evaluated on the amount of shared leadership is present, the amount of co-planning time, honest communication between the two educators, and how much respect and trust is present in the relationship.

Models

There are several models of co-teaching, identified by Friend and Cook (1996), including:

- **One Teach, One Support:** One teacher leads instruction, while the other provides support to students who need additional help or enrichment, gathers observation data, or provides classroom management.
- **Parallel Teaching:** Each teacher, or teacher and student teacher, plan jointly but each

teaches the same information to different halves of the classroom at the same time.

- **Alternative Teaching:** One teacher manages most of the class while the other teacher works with a small group inside or outside of the classroom. The small group does not have to integrate with the current lesson.
- **Station Teaching:** Both teachers divide the instructional content, and each takes responsibility for planning and teaching part of it. In station teaching, the classroom is divided into various teaching centers. The teacher and student teacher are at particular stations; the other stations are run independently by the students or by a teacher's aide.
- **Team Teaching:** Both teachers are responsible for planning and share the instruction of all students. The lessons are taught by both teachers who actively engage in conversation, not lecture, to encourage discussion by students. Both teachers are actively involved in the management of the lesson and discipline.

Research

As a delivery model for special education services, one study found important strategies were infrequently observed in this model, and the special education teacher played a subordinate role. Thomas E. Scruggs, Margo A. Mastropieri. George Mason University. "Co-Teaching in Inclusive Classrooms: A Metasynthesis of Qualitative Research" *Exceptional Children* July 2007 vol. 73 no. 4 392-416

Another study reviewed student outcomes via a resource room model and co-teaching. It found resource room delivery superior in terms of academic progress. Other research has shown that the results of co-teaching benefit both the educators and the students. but the study lacked long-term data.

One author reviewed eight studies of students impressions of co-teaching, and found the majority preferred receiving services outside of the classroom for part of the day, noting they formed a better relationship with their special education teacher and understood content better in specialized instruction within a resource room.

Research

Research comprises "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of humans, culture and society, and the use of this stock of knowledge to devise new applications." It is used to establish or confirm facts, reaffirm the results of previous work, solve new or existing problems, support theorems, or develop new theories. A research project may also be an expansion on past work in the field. To test the validity of instruments, procedures, or experiments, research may replicate elements of prior projects, or the project as a whole. The primary purposes of basic research (as opposed to applied research) are documentation, discovery, interpretation, or the research and development (R&D) of methods and systems for the advancement of human knowledge. Approaches to research depend on epistemologies, which vary considerably both within and between humanities and sciences. There are

several forms of research: scientific, humanities, artistic, economic, social, business, marketing, practitioner research, life, technological, etc.



Bas-relief sculpture “Research holding the torch of knowledge” (1896) by Ervin Coritana with Mano Pots. Library of Congress, Thomas Jefferson Building, Washington, D.C.

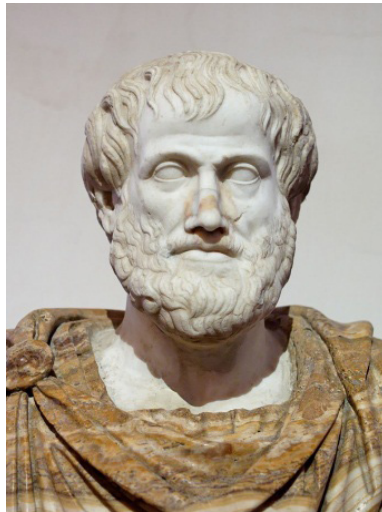
Forms of Research

Scientific research is a systematic way of gathering data and harnessing curiosity. This research provides scientific information and theories for the explanation of the nature and the properties of the world. It makes practical applications possible. Scientific research is funded by public authorities, by charitable organizations and by private groups, including many companies. Scientific research can be subdivided into different classifications according to their academic and application disciplines. Scientific research is a widely used criterion for judging the standing of an academic institution, such as business schools, but some argue that such is an inaccurate assessment of the institution, because the quality of research does not tell about the quality of teaching (these do not necessarily correlate).

Research in the humanities involves different methods such as for example hermeneutics and semiotics. Humanities scholars usually do not search for the ultimate correct answer to a question, but instead explore the issues and details that surround it. Context is always important, and context can be social, historical, political, cultural, or ethnic. An example of research in the humanities is historical research, which is embodied in historical method. Historians use primary sources and other evidence to systematically investigate a topic, and then to write histories in the form of accounts of the past.

Artistic research, also seen as ‘practice-based research’, can take form when creative works are considered both the research and the object of research itself. It is the debatable body of thought which offers an alternative to purely scientific methods in research in its search for knowledge and truth.

Etymology



Aristotle, 384 BC – 322 BC, - one of the early figures in the development of the scientific method.

The word *research* is derived from the Middle French “*recherche*”, which means “to go about seeking”, the term itself being derived from the Old French term “*recerchier*” a compound word from “re-” + “cerchier”, or “sercher”, meaning ‘search’. The earliest recorded use of the term was in 1577.

Definitions

Research has been defined in a number of different ways.

A broad definition of research is given by Godwin Colibao - “In the broadest sense of the word, the definition of research includes any gathering of data, information and facts for the advancement of knowledge.”

Another definition of research is given by Creswell who states that - “Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue”. It consists of three steps: Pose a question, collect data to answer the question, and present an answer to the question.

The Merriam-Webster Online Dictionary defines research in more detail as “a studious inquiry or examination; especially investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws”.

Steps in Conducting Research

Research is often conducted using the hourglass model structure of research. The hourglass model

starts with a broad spectrum for research, focusing in on the required information through the method of the project (like the neck of the hourglass), then expands the research in the form of discussion and results. The major steps in conducting research are:

- Identification of research problem
- Literature review
- Specifying the purpose of research
- Determine specific research questions
- Specification of a conceptual framework, usually a set of hypotheses
- Choice of a methodology (for data collection)
- Data collection
- Verify data
- Analyzing and interpreting the data
- Reporting and evaluating research
- Communicating the research findings and, possibly, recommendations

The steps generally represent the overall process; however, they should be viewed as an ever-changing iterative process rather than a fixed set of steps. Most research begins with a general statement of the problem, or rather, the purpose for engaging in the study. The literature review identifies flaws or holes in previous research which provides justification for the study. Often, a literature review is conducted in a given subject area before a research question is identified. A gap in the current literature, as identified by a researcher, then engenders a research question. The research question may be parallel to the hypothesis. The hypothesis is the supposition to be tested. The researcher(s) collects data to test the hypothesis. The researcher(s) then analyzes and interprets the data via a variety of statistical methods, engaging in what is known as empirical research. The results of the data analysis in confirming or failing to reject the Null hypothesis are then reported and evaluated. At the end, the researcher may discuss avenues for further research. However, some researchers advocate for the flip approach: starting with articulating findings and discussion of them, moving “up” to identification research problem that emerging in the findings and literature review introducing the findings. The flip approach is justified by the transactional nature of the research endeavor where research inquiry, research questions, research method, relevant research literature, and so on are not fully known until the findings fully emerged and interpreted.

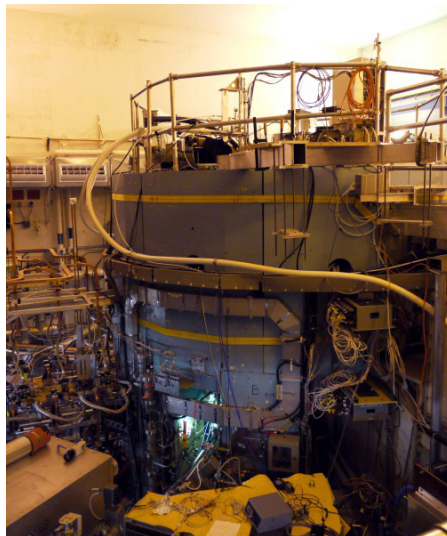
Rudolph Rummel says, “... no researcher should accept any one or two tests as definitive. It is only when a range of tests are consistent over many kinds of data, researchers, and methods can one have confidence in the results.”

Plato in Meno talks about an inherent difficulty, if not a paradox, of doing research that can be paraphrase in the following way, “If you know what you’re searching for, why do you search for it?! [i.e., you have already found it] If you don’t know what you’re searching for, what are you searching for?!”

Scientific Research



Primary scientific research being carried out at the Microscopy Laboratory of the Idaho National Laboratory.



Scientific research equipment at MIT.

Generally, research is understood to follow a certain structural process. Though step order may vary depending on the subject matter and researcher, the following steps are usually part of most formal research, both basic and applied:

1. **Observations and Formation of the topic:** Consists of the subject area of ones interest and following that subject area to conduct subject related research. The subject area should not be randomly chosen since it requires reading a vast amount of literature on the topic to determine the gap in the literature the researcher intends to narrow. A keen interest in the chosen subject area is advisable. The research will have to be justified by linking its importance to already existing knowledge about the topic.
2. **Hypothesis:** A testable prediction which designates the relationship between two or more variables.
3. **Conceptual definition:** Description of a concept by relating it to other concepts.
4. **Operational definition:** Details in regards to defining the variables and how they will be measured/assessed in the study.

5. Gathering of data: Consists of identifying a population and selecting samples, gathering information from and/or about these samples by using specific research instruments. The instruments used for data collection must be valid and reliable.
6. Analysis of data: Involves breaking down the individual pieces of data in order to draw conclusions about it.
7. Data Interpretation: This can be represented through tables, figures and pictures, and then described in words.
8. Test, revising of hypothesis
9. Conclusion, reiteration if necessary

A common misconception is that a hypothesis will be proven. Generally, a hypothesis is used to make predictions that can be tested by observing the outcome of an experiment. If the outcome is inconsistent with the hypothesis, then the hypothesis is rejected. However, if the outcome is consistent with the hypothesis, the experiment is said to support the hypothesis. This careful language is used because researchers recognize that alternative hypotheses may also be consistent with the observations. In this sense, a hypothesis can never be proven, but rather only supported by surviving rounds of scientific testing and, eventually, becoming widely thought of as true.

A useful hypothesis allows prediction and within the accuracy of observation of the time, the prediction will be verified. As the accuracy of observation improves with time, the hypothesis may no longer provide an accurate prediction. In this case, a new hypothesis will arise to challenge the old, and to the extent that the new hypothesis makes more accurate predictions than the old, the new will supplant it. Researchers can also use a null hypothesis, which state no relationship or difference between the independent or dependent variables. A null hypothesis uses a sample of all possible people to make a conclusion about the population.

Historical Method

The historical method comprises the techniques and guidelines by which historians use historical sources and other evidence to research and then to write history. There are various history guidelines that are commonly used by historians in their work, under the headings of external criticism, internal criticism, and synthesis. This includes lower criticism and sensual criticism. Though items may vary depending on the subject matter and researcher, the following concepts are part of most formal historical research:

- Identification of origin date
- Evidence of localization
- Recognition of authorship
- Analysis of data
- Identification of integrity
- Attribution of credibility



German historian Leopold von Ranke (1795-1886), considered to be one of the founders of modern source-based history.

Research Methods



The research room at the New York Public Library, an example of secondary research in progress.



Maurice Hilleman is credited with saving more lives than any other scientist of the 20th century.

The goal of the research process is to produce new knowledge or deepen understanding of a topic or issue. This process takes three main forms (although, as previously discussed, the boundaries between them may be obscure):

- Exploratory research, which helps to identify and define a problem or question.
- Constructive research, which tests theories and proposes solutions to a problem or question.
- Empirical research, which tests the feasibility of a solution using empirical evidence.

There are two major types of empirical research design: qualitative research and quantitative research. Researchers choose qualitative or quantitative methods according to the nature of the research topic they want to investigate and the research questions they aim to answer:

Qualitative research

Understanding of human behavior and the reasons that govern such behavior. Asking a broad question and collecting data in the form of words, images, video etc that is analyzed and searching for themes. This type of research aims to investigate a question without attempting to quantifiably measure variables or look to potential relationships between variables. It is viewed as more restrictive in testing hypotheses because it can be expensive and time-consuming, and typically limited to a single set of research subjects. Qualitative research is often used as a method of exploratory research as a basis for later quantitative research hypotheses. Qualitative research is linked with the philosophical and theoretical stance of social constructionism.

Quantitative research

Systematic empirical investigation of quantitative properties and phenomena and their relationships. Asking a narrow question and collecting numerical data to analyze utilizing statistical methods. The quantitative research designs are experimental, correlational, and survey (or descriptive). Statistics derived from quantitative research can be used to establish the existence of associative or causal relationships between variables. Quantitative research is linked with the philosophical and theoretical stance of positivism.

The quantitative data collection methods rely on random sampling and structured data collection instruments that fit diverse experiences into predetermined response categories. These methods produce results that are easy to summarize, compare, and generalize. Quantitative research is concerned with testing hypotheses derived from theory and/or being able to estimate the size of a phenomenon of interest. Depending on the research question, participants may be randomly assigned to different treatments (this is the only way that a quantitative study can be considered a true experiment). If this is not feasible, the researcher may collect data on participant and situational characteristics in order to statistically control for their influence on the dependent, or outcome, variable. If the intent is to generalize from the research participants to a larger population, the researcher will employ probability sampling to select participants.

In either qualitative or quantitative research, the researcher(s) may collect primary or secondary data. Primary data is data collected specifically for the research, such as through interviews or questionnaires. Secondary data is data that already exists, such as census data, which can be re-used for the research. It is good ethical research practice to use secondary data wherever possible.

Mixed-method research, i.e. research that includes qualitative and quantitative elements, using both primary and secondary data, is becoming more common.

Big data has brought big impacts on research methods that now researchers do not put much effort on data collection, and also methods to analyze easily available huge amount of data have also changed.

Nonempirical refers to an approach that is grounded in theory as opposed to using observation and experimentation to achieve the outcome. As such, nonempirical research seeks solutions to problems using existing knowledge as its source. This, however, does not mean that new ideas and innovations cannot be found within the pool existing and established knowledge. Nonempirical is not an absolute alternative to empirical research because they may be used together to strengthen a research approach. Neither one is less effective than the other since they have their particular purpose within life and in science. A simple example of a nonempirical task could be the prototyping of a new drug using a differentiated application of existing knowledge; similarly, it could be the development of a business process in the form of a flow chart and texts where all the ingredients are from established knowledge. Empirical research on the other hand seeks to create new knowledge through observations and experiments in which established knowledge can either be contested or supplemented.

Research Method Controversies

There have been many controversies about research methods stemmed from a philosophical positivism promise to distinguish the science from other practices (especially religion) by its method. This promise leads to methodological hegemony and methodology wars where diverse researchers, often coming from opposing paradigms, try to impose their own methodology on the entire field or even on the science practice in general as the only legitimate one.

Quantitative Vs. Qualitative War

Anti-methodology

According to this view, general scientific methodology does not exist and attempts to impose it on scientists is counterproductive. Each particular research with its emerging particular inquiries requires and should produce its own way (method) of researching. Similar to the art practice, the notion of methodology has to be replaced with the notion of research mastery.

Problems in Research

Western Dominance

Research disciplines have been dominated by academics from Western countries, particularly by Americans. Geopolitical power dynamics have placed Western scholars as the elite gatekeepers of academia, relegating scholars from Periphery countries to inferior positions.

Methods of Research

In many disciplines, Western methods of conducting research are predominant. Researchers are overwhelmingly taught Western methods of data collection and study. The increasing participa-

tion of Indigenous peoples as researchers has brought increased attention to the lacuna in culturally-sensitive methods of data collection. Non-Western methods of data collection may not be the most accurate or relevant for research on non-Western societies. For example, “Hua Oranga” was created as a criterium for psychological evaluation in Maori populations, and is based on dimensions of mental health important to the Maori people – “taha wairua (the spiritual dimension), taha hinengaro (the mental dimension), taha tinana (the physical dimension), and taha whanau (the family dimension)”.

Linguicism

Periphery scholars face the challenges of exclusion and Linguicism in research and academic publication. As the great majority of mainstream academic journals are written in English, multilingual periphery scholars often must translate their work in order to be accepted to elite Western-dominated journals. Multilingual scholars’ influences from their native communicative styles can be assumed to be incompetence instead of difference.

Publication

Publications from periphery countries rarely rise to the same elite status as those of North America and Europe primarily because of fewer material resources, rendering them less able to meet practical conventions of publishing such as paper weight and graphic quality. These subdue the voices of periphery scholars and prevent their contributions to collective knowledge.

Influence of the Open-Access Movement

The open access movement assumes that all information generally deemed useful should be free and belongs to a “public domain”, that of “humanity”. This idea gained prevalence as a result of Western colonial history and ignores alternative conceptions of knowledge circulation. For instance, most indigenous communities consider that access to certain information proper to the group should be determined by relationships.

There is a double standard found in the Western knowledge system. On the one hand, “digital right management” used to restrict access to personal information on social networking platforms are celebrated as a protection of privacy, while simultaneously when similar functions are utilised by cultural groups (ie indigenous communities) this is denounced as “access control” and reprehended as censorship.

Future Perspectives

Even though Western dominance seems to be prominent in research, some scholars, such as Simon Marginson, argue for “the need [for] a plural university world”. Marginson argues that the East Asian Confucian model could take over the Western model.

This could be due to changes in funding for research both in the East and the West. Focussed on emphasizing educational achievement, East Asian cultures, mainly in China and South Korea, have encouraged the increase of funding for research expansion. In contrast, in the Western academic world, notably in the United Kingdom as well as in some state governments in the United

States, funding cuts for university research is observed which may lead to the future decline of Western dominance in research.

Professionalisation

In several national and private academic systems, the professionalization of research has resulted in formal job titles.

In Russia

In present-day Russia, the former Soviet Union and in some Post-Soviet states the term *researcher* (Russian: Научный сотрудник, *nauchny sotrudnik*) is both a generic term for a person who carried out scientific research, as well as a job position within the frameworks of the USSR Academy of Sciences, Soviet universities, and in other research-oriented establishments. The term is also sometimes translated as *research fellow*, *research associate*, etc.

The following ranks are known:

- Junior Researcher (Junior Research Associate)
- Researcher (Research Associate)
- Senior Researcher (Senior Research Associate)
- Leading Researcher (Leading Research Associate)
- Chief Researcher (Chief Research Associate)

Publishing



A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE

"To the wild grand
Of Nature from the mind which holds her up."—WILSONWOODS

THURSDAY, NOVEMBER 4, 1869

NATURE: APHORISMS BY GOETHE

NATURE! We are surrounded and embraced by her: possessive to separate ourselves from her, and powerless to penetrate beyond her.

Without asking, or coming, she matches us up into her circling arms, and whisks us on until we are tired, and drop from her arms.

She is ever shaping new forms: what is, has never yet been; what has been, comes not again. Everything is new, and yet nought but the old.

We live in her midst and know her not. She is incessantly speaking to us, but listens not to our voice. We constantly act upon her, and yet have no power over her.

The one thing she seems to aim at is Individuality; yet she craves nothing for individuals. She is always building up and destroying; but her workshop is inaccessible.

Her life is in her children; but where is the mother? She is the only artist; working up the most uniform material into utter opposites; forming, without a trace of effort, at perfection, at the most exact precision, though always veiled under a certain softness.

Each of her works has an essence of its own; each of her phenomena a special characterisation; and yet their diversity is in unity.

She performs a play; we know not whether she sees it herself, and yet she acts for us, the lookers-on.

Incessant life, development, and movement are in her, but she advances not. She changes for ever and ever, and rests not a moment. Quietude is inconceivable to her, and she has laid her curse upon rest. She is firm. Her steps are measured; her exceptions rare, her laws unchangeable.

She has always thought and always thinks; though not as a man, but as Nature. She broods over an

all-comprehending idea, which no searching can find out.

Marked! dwell in her and she is them. With all men she plays a game for love, and rejoices the more they win. With many, her moves are so hidden, that the game is over before they know it.

That which is most unattainable is still Nature; the stupidest philistine has a touch of her genius. Whoso cannot see her everywhere, sees her nowhere rightly.

She loves herself, and her innumerable eyes and affections are fixed upon herself. She has divided herself that she may be her own delight. She craves an endless succession of new excursions for enjoyment to spring up, that her insatiable sympathy may be assuaged.

She rejoices in illusion. Whoso destroys it in himself and others, him she punishes with the sternest tyranny. Whoso follows her in faith, him she takes as a child to her bosom.

Her children are numberless. To none is she altogether misty; but she has her favourites, on whom she squanders much, and for whom she makes great sacrifices. Over greatness she spreads her shield.

She nurses her creatures out of nothingness, and tells them not whence they came, nor whether they go. It is their business to run, she knows the road.

Her mechanism has few springs—but they never wear out, are always active and manifold.

The spectacle of Nature is always new, for she is always renewing the spectators. Life is her most exquisite invention; and death is her most ostentatious way to get plenty of life.

She wraps man in darkness, and makes him for ever long for light. She creates him dependent upon the earth, dull and heavy; and yet he always shaking him with, he attempts to soar above it.

Cover of the first issue of *Nature*, 4 November 1869.

Academic publishing describes a system that is necessary in order for academic scholars to peer review the work and make it available for a wider audience. The system varies widely by

field, and is also always changing, if often slowly. Most academic work is published in journal article or book form. There is also a large body of research that exists in either a thesis or dissertation form. These forms of research can be found in databases explicitly for theses and dissertations. In publishing, STM publishing is an abbreviation for academic publications in science, technology, and medicine.

Most established academic fields have their own scientific journals and other outlets for publication, though many academic journals are somewhat interdisciplinary, and publish work from several distinct fields or subfields. The kinds of publications that are accepted as contributions of knowledge or research vary greatly between fields; from the print to the electronic format. A study suggests that researchers should not give great consideration to findings that are not replicated frequently. It has also been suggested that all published studies should be subjected to some measure for assessing the validity or reliability of its factors in order to prevent the publication of unproven findings. Business models are different in the electronic environment. Since about the early 1990s, licensing of electronic resources, particularly journals, has been very common. Presently, a major trend, particularly with respect to scholarly journals, is open access. There are two main forms of open access: open access publishing, in which the articles or the whole journal is freely available from the time of publication, and self-archiving, where the author makes a copy of their own work freely available on the web.

Research Funding

Most funding for scientific research comes from three major sources: corporate research and development departments; private foundations, for example, the Bill and Melinda Gates Foundation; and government research councils such as the National Institutes of Health in the USA and the Medical Research Council in the UK. These are managed primarily through universities and in some cases through military contractors. Many senior researchers (such as group leaders) spend a significant amount of their time applying for grants for research funds. These grants are necessary not only for researchers to carry out their research, but also as a source of merit.

The Social Psychology Network provides a comprehensive list of U.S. Government and private foundation funding sources.

Original Research

Original research is research that is not exclusively based on a summary, review or synthesis of earlier publications on the subject of research. This material is of a primary source character. The purpose of the original research is to produce new knowledge, rather than to present the existing knowledge in a new form (*e.g.*, summarized or classified).

Different Forms

Original research can take a number of forms, depending on the discipline it pertains to. In experimental work, it typically involves direct or indirect observation of the researched subject(s), *e.g.*, in the laboratory or in the field, documents the methodology, results, and conclusions of an experiment or set of experiments, or offers a novel interpretation of previous results. In analytical work, there are typically some new (for example) mathematical results produced, or a new way of approaching an existing problem. In some subjects which do not typically carry out experimentation

or analysis of this kind, the originality is in the particular way existing understanding is changed or re-interpreted based on the outcome of the work of the researcher.

The degree of originality of the research is among major criteria for articles to be published in academic journals and usually established by means of peer review. Graduate students are commonly required to perform original research as part of a dissertation.

Artistic Research

The controversial trend of artistic teaching becoming more academics-oriented is leading to artistic research being accepted as the primary mode of enquiry in art as in the case of other disciplines. One of the characteristics of artistic research is that it must accept subjectivity as opposed to the classical scientific methods. As such, it is similar to the social sciences in using qualitative research and intersubjectivity as tools to apply measurement and critical analysis.

Artistic research has been defined by the University of Dance and Circus (Dans och Cirkushögskolan, DOCH), Stockholm in the following manner - “Artistic research is to investigate and test with the purpose of gaining knowledge within and for our artistic disciplines. It is based on artistic practices, methods and criticality. Through presented documentation, the insights gained shall be placed in a context.” Artistic research aims to enhance knowledge and understanding with presentation of the arts.

According to artist Hakan Topal, in artistic research, “perhaps more so than other disciplines, intuition is utilized as a method to identify a wide range of new and unexpected productive modalities”. Most writers, whether of fiction or non-fiction books, also have to do research to support their creative work. This may be factual, historical, or background research. Background research could include, for example, geographical or procedural research.

The Society for Artistic Research (SAR) publishes the triannual *Journal for Artistic Research* (JAR), an international, online, open access, and peer-reviewed journal for the identification, publication, and dissemination of artistic research and its methodologies, from all arts disciplines and it runs the *Research Catalogue* (RC), a searchable, documentary database of artistic research, to which anyone can contribute.

Patricia Leavy addresses eight arts-based research (ABR) genres, they are: narrative inquiry, fiction-based research, poetry, music, dance, theatre, film, and visual art.

Factory Model School

Factory model school and factory model education are terms describing both a style of learning and of educational facilities. The educational style, or pedagogy, first emerged in Europe in the late 18th Century and then in North America in the mid-19th century. The key characteristics of factory model education are top-down management, separation from the community, emphasis on management, centralized planning, standardization, outcomes designed to meet societal needs, and efficiency in producing results. They are frequently compared to the factory system of production.

Factory model school facilities are typified by the school design of the mid to late 20th century - the modern or international style of architecture typified by efficiency and uniformity, often resembling a factory building. The system has been described as being “designed to create docile subjects and factory workers.”



High School of Graphic Communication Arts, constructed in 1959



North American school classroom, 1943

The origins of factory model education and schools date back to the Prussian educational system introduced into what is now eastern Germany in the late 18th century by Frederick the Great. In North America, it emerged in the constitution of Michigan in 1835 before being brought to national attention by Horace Mann after a visit to Prussia in 1843. Mann, then secretary of the Massachusetts board of education (the first in the United States) has been styled as “the father of the American public school system.” He studied many educational systems before promoting and introducing universal, free, and secular education based on the Prussian model as the most efficient way known to teach literacy on a large scale. Within six decades every state in the USA had introduced a similar system.

King Frederick’s system was designed to teach obedience to solidify his control of the country.

In the United States it found favor for its efficiency and secular form. American educators such as Ellwood Cubberley emphasized the rise of American education as a powerful force for literacy, democracy, and equal opportunity, and as a basis for higher education and advanced research institutions. Cubberley and social engineering theorists promoted the system as a way to industrialize the educational process as well as a tool for social engineering. In *Public School Administration* (1916), he described “schools as, in a sense, factories in which the raw products (children) are to be shaped and fashioned into products to meet the various demands of life.” Cubberley wrote that a school’s role is “to break up these groups or settlements, to assimilate and amalgamate these people as part of our American race, and to implant in their children so far as can be done, the Anglo-Saxon conception of righteousness, law and order and popular government.”

After World War II there was a great demand for new school buildings to meet the needs of the Baby Boom. This period also saw the emergence of the international style of architecture with a modern industrial aesthetic, little ornamentation, efficient use of space and materials, and with strong influences of social equality. The design of educational buildings of the mid-late 20th century often had a similar approach, with a common result being buildings that were impersonal and factory-like in organization and appearance.

Pedagogy

Factory model schools employ direct instruction methods: a teacher drilled information into the class in “assembly line fashion”, the students learn by rote copying and memorization, and they are then tested on the information presented to them. This is also referred to as “sage on the stage” method.

The factory model method also features depersonalization, strict hierarchy of authority, uniformity over innovation, process and procedure, and standardization of curriculum, testing, class sizes, time periods, and learning rates. This approach has been compared to Taylorism, F. W. Taylor’s business model for efficiency.

Facilities



Bundesarchiv - Bild 183-1907-0204-205
Foto: Lehmann, Thomas | 4. Februar 1987

Bauhaus Dessau Workshop



Crow Island School, constructed 1940



“Cells and bells:” double-loaded school corridor with concrete block walls

Factory model classrooms emerged in parallel with factory model education in the 19th century. These were designed around a lecture-style format of teaching, also known as direct instruction, with the teacher standing at the front of the classroom with the students seated in rows of desks, often fixed to the floor. Factory model classrooms tend to be of a similar size and configuration, 800-900 square feet, with approximately 28-35 students of about the same age. As single-room schools became larger, this model was replicated, with the classrooms created as a series of boxes, often along a long double-loaded corridor (with classrooms on each side). This is a common feature of the most common organizational model, the departmental model, and also became known as “cells and bells”.

Efficiency in design was a key determinant of school design as early as the 1920’s, with John Joseph Donovan’s seminal “School Architecture: Principles and Practices” (1921), calling for schools to be “tested in the abstract for efficiency and adequacy.” A key prototype for designing an educational building on a factory model was the 1920’s Bauhaus in Dessau, Germany. Factory model school buildings became the prevalent style of educational facilities after World War II. As schools grew to frequently include 3,000 or more students, the number of classrooms and length of these corridors expanded proportionally.

The school that inspired much of the mid-20th century, North American “school box” was the Crow Island School, which opened in 1940 in Illinois. It was designed to support a progressive education and personalized model while also using aesthetics and forms that would soon become part of the modern or International Style. Many schools designed subsequently during the Baby Boom cop-

ied Crow Island, but only the basic features: asymmetrical single-story form, made of concrete or masonry, strong horizontality, and large windows. These were not true replicas of Crow Island in layout or in the educational style they supported, but only superficially in appearance.

The primary design impetus of many schools built in this era was to renovate unsafe or overcrowded facilities, remove inadequate temporary classrooms commonly referred to as “portables”, and not to create exciting learning environments. Innovative designs were resisted due to public perceptions that they are always more costly. Schools districts saw little need to change a system they perceived to be working, especially in areas with high test scores and satisfied parents.”

Criticism

Factory model schools have been criticized in several ways, including educational performance, student attendance, not preparing students for 21st century society, aesthetics, inspiration, and safety. 21st century skills such as collaboration, creativity, and critical thinking are not supported as effectively by direct instruction as by methods that employ active learning or by inflexible, standardized classrooms. Attendance and graduation rates are increasing sources of concern. Designs that are unattractive, difficult to maintain, and uninspiring are not conducive to healthy or inviting environments for students or teachers. Long, labyrinth-like corridors are not conducive to safety and security. Society, the workplace, and technology changed significantly over the past few decades yet the majority of classrooms in North America have not significantly changed since the late 19th century.

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Theory, Psychology and Philosophy of Education

Education theory focuses on the building of policies and practices centering on education while also seeking to analyze and comprehend them. The sociology of education on the other hand studies how public establishments and individual perceptions affect education. This chapter outlines education theory, psychology of education, philosophy of education, educational psychology, sociology of education and constructivism in the philosophy of education.

Education Theory

- Education theory seeks to know, understand and prescribe educational policy and practice. Education theory includes many topics, such as pedagogy, andragogy, curriculum, learning, and education policy, organization and leadership. Educational thought is informed by many disciplines, such as history, philosophy, sociology, and

For example, a cultural theory of education considers how education occurs through the totality of culture, including prisons, households, and religious institutions as well as schools. Other examples are the behaviorist theory of education that comes from educational psychology and the functionalist theory of education that comes from sociology of education.

The earliest known attempts to understand education in Europe were by classical Greek philosophers and sophists, but there is also evidence of contemporary (or even preceding) discussions among Arabic, Indian, and Chinese scholars.

Educational Thought

Educational thought is not necessarily concerned with the construction of theories as much as the “reflective examination of educational issues and problems from the perspective of diverse disciplines.”

Normative Theories of Education

Normative theories of education provide the norms, goals, and standards of education.

Educational Philosophies

“Normative philosophies or theories of education may make use of the results of [philosophical thought] and of factual inquiries about human beings and the psychology of learning, but in any case they propound views about what education should be, what dispositions it should cultivate, why it ought to cultivate them, how and in whom it should do so, and what forms it

should take. In a full-fledged philosophical normative theory of education, besides analysis of the sorts described, there will normally be propositions of the following kinds: 1. Basic normative premises about what is good or right; 2. Basic factual premises about humanity and the world; 3. Conclusions, based on these two kinds of premises, about the dispositions education should foster; 4. Further factual premises about such things as the psychology of learning and methods of teaching; and 5. Further conclusions about such things as the methods that education should use.”

Examples of the purpose of schools include: to develop reasoning about perennial questions, to master the methods of scientific inquiry, to cultivate the intellect, to create change agents, to develop spirituality, and to model a democratic society.

Common educational philosophies include: educational perennialism, educational progressivism, educational essentialism, critical pedagogy, Montessori education, Waldorf education, and democratic education.

Curriculum Theory

Normative theories of curriculum aim to “describe, or set norms, for conditions surrounding many of the concepts and constructs” that define curriculum. These normative propositions differ from those above in that normative curriculum theory is not necessarily untestable. A central question asked by normative curriculum theory is: given a particular educational philosophy, what is worth knowing and why? Some examples are: a deep understanding of the Great Books, direct experiences driven by student interest, a superficial understanding of a wide range knowledge (e.g. Core knowledge), social and community problems and issues, knowledge and understanding specific to cultures and their achievements (e.g. African-Centered Education)

Feminist Educational Theory

Background

Scholars such as Robyn Wiegman argue that, “academic feminism is perhaps the most successful institutionalizing project of its generation, with more full-time faculty positions and new doctoral degree programs emerging each year in the field it inaugurated, Women’s Studies”. Feminist educational theory stems from four key tenets, supported by empirical data based on surveys of feminist educators. The first tenet of feminist educational theory is, “Creation of participatory classroom communities”. Participatory classroom communities often are smaller classes built around discussion and student involvement. The second tenet is, “Validation of personal experience”. Classrooms in which validation of personal experience occur often are focused around students providing their own insights and experiences in group discussion, rather than relying exclusively on the insight of the educator. The third tenet is, “Encouragement of social understanding and activism”. This tenet is generally actualized by classrooms discussing and reading about social and societal aspects that students may not be aware of, along with breeding student self-efficacy. The fourth and final tenet of feminist education is, “Development of critical thinking skills/open-mindedness”. Classrooms actively engaging in this tenet encourage students to think for themselves and prompt them to move beyond their comfort zones, working outside the bounds of the traditional lecture-based classroom. Though these tenets at times overlap, they combine

to provide the basis for modern feminist educational theory, and are supported by a majority of feminist educators.

Feminist educational theory derives from the feminist movement, particularly that of the early 1970s, which prominent feminist bell hooks describes as, “a movement to end sexism, sexist exploitation, and oppression”. Academic feminist Robyn Weigman recalls that, “In the early seventies, feminism in the U.S. academy was less an organized entity than a set of practices: an ensemble of courses listed on bulletin boards often taught for free by faculty and community leaders”. While feminism traditionally existed outside of the institutionalization of schools (particularly universities), feminist education has gradually taken hold in the last few decades and has gained a foothold in institutionalized educational bodies. “Once fledgling programs have become departments, and faculty have been hired and tenured with full-time commitments”.

Opposition

Opposition to feminist educational theory comes from both those who oppose feminism in general and feminists who oppose feminist educational theory in particular. Critics of feminist educational theory argue against the four basic tenets of the theory, “... [contesting] both their legitimacy and their implementation”. Lewis Lehrman particularly describes feminist educational ideology as, “... ‘therapeutic pedagogy’ that substitutes an ‘overriding’ (and detrimental) value on participatory interaction for the expertise of the faculty” (Hoffman). Lehrman argues that the feminist educational tenets of participatory experience and validation of person experience hinder education by limiting and inhibiting the educator’s ability to share his or her knowledge, learned through years of education and experience.

Others challenge the legitimacy of feminist educational theory, arguing that it is not unique and is instead a sect of liberatory education. Even feminist educational scholars such as Frances Hoffmann and Jayne Stake are forced to concede that, “feminist pedagogy shared intellectual and political roots with the movements comprising the liberatory education agenda of the past 30 years”. These liberatory attempts at the democratization of classrooms demonstrate a growth in liberatory education philosophy that some argue feminist educational theory simply piggybacks off of.

The harshest critiques of feminist educational theory often come from feminists themselves. Feminist scholar Robyn Wiegman argues against feminist education in her article “Academic Feminism against Itself,” arguing that feminist educational ideology has abandoned the intersectionality of feminism in many cases, and has also focused exclusively on present content with a singular perspective. Wiegman refers to feminist scholar James Newman’s arguments, centered around the idea that, “When we fail... to challenge both students and ourselves to theorize alterity as an issue of change over time as well as of geographic distance, ethnic difference, and sexual choice, we repress... not only the ‘thickness’ of historical difference itself, but also... our (self) implication in a narrative of progress whose hero(in)es inhabit only the present”. Newman (and Wiegman) believe that this presentist ideology imbued within modern academic feminism creates an environment breeding antifeminist ideologies, most importantly an abandonment of the study of difference, integral to feminist ideology. Wiegman believes that feminist educational theory does a great disservice to the feminist movement, while failing to instill the critical thinking and social awareness that feminist educational theory is intended to.

Support

There are countless supporters of feminist education as well, many of whom are educators or students. Student-turned-professor Becky Ropers-Huilman recounts one of her positive experiences with feminist education from the student perspective, explaining that she “... felt very ‘in charge’ of [her] own learning experiences,” and “... was not being graded-or degraded... [while completing] the majority of the assigned work for the class (and additional work that [she] thought would add to class discussion),” all while “... [regarding] the teacher’s feedback on [her] participation as one perspective, rather than the perspective”. Ropers experienced a working feminist classroom that successfully motivated students to go above and beyond, succeeding in generating self-efficacy and caring in the classroom. When Ropers became a teacher herself, she embraced feminist educational theory, noting that, “[Teachers] have an obligation as the ones who are vested with an assumed power, even if that power is easily and regularly disrupted, to assess and address the effects that it is having in our classrooms”. Ropers firmly believes that educators have a duty to address feminist concepts such as the use and flow of power within the classroom, and strongly believes in the potential of feminist educational theory to create positive learning experiences for students and teachers as she has personally experienced.

Becky Ropers-Huilman also celebrates the feminist classroom’s inclusivity, noting that in a feminist classroom, “in which power is used to care about, for, and with others... educational participants can shape practices aimed at creating an inclusive society that discovers and utilizes the potential of its actors”. Ropers believes that a feminist classroom carries the ability to greatly influence the society as a whole, promoting understanding, caring, and inclusivity. Ropers actively engages in feminist education in her classes, focusing on concepts such as active learning and critical thinking while attempting to demonstrate and engage in caring behavior and atypical classroom settings, similar to many other feminist educators.

Leading feminist scholar bell hooks argues for the incorporation of feminism into all aspects of society, including education, in her book *Feminism is for Everybody*. hooks notes that, “Everything [people] know about feminism has come into their lives thirdhand”. hooks believes that education offers a counter to the, “... wongminded notion of feminist movement which implied it was anti-male”. hooks cites feminism’s negative connotations as major inhibitors to the spread and adoption of feminist ideologies. However, feminist education has seen tremendous growth in adoption in the past few decades, despite the negative connotations of its parent movement.

Descriptive Theories of Education

Descriptive theories of education provide descriptions or explanations of the processes of education.

Curriculum Theory

Descriptive theories of curriculum explain how curricula “benefit or harm all publics it touches”.

The term hidden curriculum describes that which is learned simply by being in a learning environment. For example, a student in a teacher-led classroom is learning submission. The hidden curriculum is not necessarily intentional.

Instructional Theory

Instructional theories focus on the methods of instruction for teaching curricula. Theories include the methods of: autonomous learning, coyote teaching, inquiry-based instruction, lecture, maturationism, socratic method, outcome-based education, taking children seriously, transformative learning

The nature of The Learner and of Learning

Philosophical Anthropology

Philosophical anthropology is the philosophical study of human nature. In terms of learning, examples of descriptive theories of the learner are: a mind, soul, and spirit capable of emulating the Absolute Mind (Idealism); an orderly, sensing, and rational being capable of understanding the world of things (Realism), a rational being with a soul modeled after God and who comes to know God through reason and revelation (Neo-Thomism), an evolving and active being capable of interacting with the environment (Pragmatism), a fundamentally free and individual being who is capable of being authentic through the making of and taking responsibility for choices (Existentialism). Philosophical concepts for the process of education include *Bildung* and *paideia*.

Educational Psychology

Educational psychology is an empirical science that provides descriptive theories of how people learn. Examples of theories of education in psychology are: constructivism, behaviorism, cognitivism, and motivational theory

Educational Neuroscience

Educational neuroscience is an emerging field that brings together researchers in diverse disciplines to explore the interactions between biological processes and education.

Sociology of Education

The sociology of education is the study of how public institutions and individual experiences affect education and its outcomes. It is most concerned with the public schooling systems of modern industrial societies, including the expansion of higher, further, adult, and continuing education. Examples of theories of education from sociology include: functionalism, conflict theory, social efficiency, and social mobility.

Educational Anthropology

Educational anthropology is a sub-field of anthropology and is widely associated with the pioneering work of George Spindler. As the name would suggest, the focus of educational anthropology is obviously on education, although an anthropological approach to education tends to focus on the cultural aspects of education, including informal as well as formal education. As education involves understandings of who we are, it is not surprising that the single most recognized dictum of educational anthropology is that the field is centrally concerned with cultural transmission.

Cultural transmission involves the transfer of a sense of identity between generations, sometimes known as enculturation and also transfer of identity between cultures, sometimes known as acculturation. Accordingly, thus it is also not surprising that educational anthropology has become increasingly focussed on ethnic identity and ethnic change.

Psychology of Education

The relationship between intelligence and education is one that scientists have been studying for years. It is correct to say that higher level of education leads to greater level of intelligence and also true the other way around, however, it does not apply for every situation.

A study done in Germany proved how education did affect the intelligence of students and proof of intelligence affecting education was seen in the military where people with lesser intelligence had slower learning and benefited less from education. Typically if the maternal IQ is high, it is very likely for the child to have a high IQ as well. A study conducted by Plug and Vijverberg showed that the environment that a child grows up in also affects his or her future academic performance. The children that were raised by their biological parents had a greater similarity in terms of intelligence and academic performance to their families than those raised by foster parents. An other study was conducted by Campbell and Ramey to test the socioeconomic effect on intelligence and it showed promising results for children at high risk of academic failure when there was an early intervention. Therefore, the determining factor for what results in a persons intelligence basically boils down to the genetics of the subject in question and the environment they were raised in.

Education as Causal of Intelligence

There is substantial evidence to suggest that education influences intelligence. One study took advantage of the school system in Germany to investigate the relationship between education and intelligence. The children in the sample were required to be 6 years old before they started the school year on April 1, so it was possible to compare children who were of a similar chronological age, but had a year's difference in schooling. They gave intelligence tests to 8-10 year olds whose birthdays fell just before or just after the dividing point. Their results showed the 8 year olds who had received an extra year in school were closer in intelligence to the 10 year olds who were a year behind, than the 8 year olds who were a year behind. This shows how education can positively affect intelligence. It is important to note, however, that the tests used were heavily loaded with questions that tested material that was learned in school. Further findings of the study showed that the differences in intelligence between the groups was particularly prominent in the tests which included a lot of school learned material. More fluid tests of intelligence, which included less class taught material, were less effected by the year of extra schooling.

Intelligence as Causal of Educational Outcomes

Longitudinal studies have shown a predictive interaction of intelligence on educational attainment. In one study which measured around 70,000 children in the UK, they investigated how a general factor in the Cognitive Abilities Test taken at age 11 correlated with GCSE scores taken at age 16. They found that the two measures correlated about 0.8 with each other, showing intelli-

gence at age 11 is predictive of grades at age 16. In this instance, children had received the same level of education, suggesting the variance is explained primarily by differences in intelligence rather than education. The predictive effect of IQ on educational success is even apparent if IQ is measured before any formal education, with measured correlations of IQ at the beginning of education and educational attainment six year later correlating 0.46.

The military provides a natural example of how those with lower intelligence learn less effectively and benefit less from education. The effect has been demonstrated as far back as World War II in which military fighter pilots were divided into groups based on a selection battery which included ability and motivation measures. Those who were in the top group completed training the first time 95% of the time, whereas those in the bottom group only completed training 20% the first time. Examples of low level recruits have even led to disagreement over whether these men should be enlisted at all, as they are costly to train, perform at a lower level than average when trained, and simply cannot learn certain specialities. Even those in favour of hiring those who are less intelligent to the military acknowledge the limitations of these particular recruits, and instead try to get around the issue by adapting the training to cater for the mental ability of the less intelligent recruits. These findings demonstrate how intelligence is necessary for learning and any form of training, and that those who are more intelligent learn more rapidly and effectively than those who are less intelligent. This could explain the high correlations between intelligence and educational attainment.

Education and Intelligence Interaction

Evidence shows that education and intelligence have a complex interaction, and this is demonstrated in a longitudinal study by Richards and Sacker. They collected data from the British 1946 birth cohort and investigated how childhood intelligence was predictive of other outcomes later in life including educational attainment and mental ability at 53 years old (using the National Adult Reading Test). The results of the experiment produced a path model in which mental ability at 8 years old was predictive of both educational attainment by 26, and mental ability at age 53. And also, education was shown to be predictive of mental ability at age 53. The findings show that intelligence at 8 years old is directly related to intelligence in later life. There is also, however, a mediating effect of education between the two intelligence measures, showing how education can have a positive effect on intelligence. This effect, however, appears to be limited by the stronger effect of initial intelligence.

Genes and Environment Relationship With Educational Outcomes

The argument as to whether intelligence leads to more education, or education leads to greater intelligence also needs to be considered in terms of nature vs nurture. The idea of intelligence influencing educational achievement stresses genes, whereas education's effect on intelligence stresses environment. The answer to this is rarely one or the other, but a combination of the two. It is important, however, to tease out the extent to which they influence one another.

Parental IQ and Education

The relationship between IQ and academic performance has been shown to extend to one's children. In a study measuring a range of family background characteristics they found that maternal

IQ was a stronger predictor of children's test scores than any other than any other family characteristics, including socio economic status. Maternal IQ predicted around 10% of the variance, with the only other consistent predictor being 'home scale scores', which measured the intellectual stimulation of the home environment, and predicted around 2% of the variance. The paper argues that the inherited genetic traits are more important than environment when predicting academic success. This effect, however, could arise either because of inherited genetic traits, or because more intelligent parents place greater emphasis on academic achievement, meaning it is unclear how much influence genes have.

To investigate whether the relationship between intelligence and educational attainment was inherited, Plug and Vijverberg compared children raised by their biological parents and children who were adopted within their first year of life. They found that children who were raised by their birth parents were more similar to the family that raised them in terms of educational attainment and intelligence than those that were raised by an adopted family. They conclude that while ability is a predictor of educational attainment it is not the complete answer, leaving space for other influences, such as environment and parenting. They do argue, however, that the largest part of ability is inherited, with genetics explaining around 0.6 of the variance. This means the opposite effect, that education affects ability, is likely small.

Twin Studies

An effective way to understand the genetic and environmental influences in behaviour is to use a Twin study. Johnson, McGue and Iacono investigated how factors that were present at age 11 influenced the change in grades to age 17 in pairs of twins. Using the Minnesota Twin Family Study, they investigated the genetic and environmental influences on intelligence and school performance. The results of the study found that around 70% of the variance in the education variables could be attributed to genetic influences. Furthermore, education outcomes had >56% of their genetic influences were shared with intelligence. This number dropped to 34% when other predictors of school grade such as engagement in class and family risk were included in the analysis, but this is still a large portion of shared genetic variance.

Other Predictors of Educational Success

Socioeconomic Status

While intelligence is clearly a predictor of success in education, there may be other variables involved that affect this relationship. Socio economic is one variable that often arises in this debate. In order to investigate this Campbell and Ramey used the results of the Abecedarian Project, which targeted children who were at high risk of academic failure and aimed to intervene and try to boost academic performance. The results showed promising improvements in IQ suggesting early intervention is important in ensuring children have the best chance of success, and socio economic status affects the IQ of children. On the other hand, while increases in IQ were observed, the best predictor of intellectual and academic achievement was still maternal IQ, which consistently explained twice the variance than that of the next best predictor. This demonstrates that while education and socio economic status influence IQ, it is still parental IQ that exert the strongest predictive effects.

Future Outcomes and Education

Research has found that education is important in reaching high level jobs, with correlations between education and job complexity being cited as high as 0.8. While this shows that education is important in successfully reaching, and performing, in high level jobs, general intelligence still plays an important role. Research has shown that an IQ of >120 is necessary to succeed in highly complex jobs such as those on an executive level. Gottfredson argues that this pattern emerges because even with sufficient training, people still need to attend to novel situations that they are not trained for and higher intelligence is required to successfully navigate the novel problems. These results demonstrate that even with a higher intelligence, education is still important in attaining higher level job positions.

Educational Psychology

Educational psychology is the branch of psychology concerned with the scientific study of human learning. The study of learning processes, from both cognitive and behavioral perspectives, allows researchers to understand individual differences in intelligence, cognitive development, affect, motivation, self-regulation, and self-concept, as well as their role in learning. The field of educational psychology relies heavily on quantitative methods, including testing and measurement, to enhance educational activities related to instructional design, classroom management, assessment, which serve to facilitate learning processes in various educational settings across the lifespan.

Educational psychology can in part be understood through its relationship with other disciplines. It is informed primarily by psychology, bearing a relationship to that discipline analogous to the relationship between medicine and biology. It is also informed by neuroscience. Educational psychology in turn informs a wide range of specialities within educational studies, including instructional design, educational technology, curriculum development, organizational learning, special education and classroom management. Educational psychology both draws from and contributes to cognitive science and the learning sciences. In universities, departments of educational psychology are usually housed within faculties of education, possibly accounting for the lack of representation of educational psychology content in introductory psychology textbooks.

The field of educational psychology involves the study of memory, conceptual processes, and individual differences (via cognitive psychology) in conceptualizing new strategies for learning processes in humans. Educational psychology has been built upon theories of Operant conditioning, functionalism, structuralism, constructivism, humanistic psychology, Gestalt psychology, and information processing.

Educational psychology has seen rapid growth and development as a profession in the last twenty years. School psychology began with the concept of intelligence testing leading to provisions for special education students, who could not follow the regular classroom curriculum in the early part of the 20th century. However, "School Psychology" itself has built a fairly new profession based upon the practices and theories of several psychologists among many different fields. Educational Psychologists are working side by side with psychiatrists, social workers, teachers, speech

and language therapists, and counselors in attempt to understand the questions being raised when combining behavioral, cognitive, and social psychology in the classroom setting.

History

Early Years

Educational psychology is a fairly new and growing field of study. Though it can date back as early as the days of Plato and Aristotle, it was not identified as a specific practice. It was unknown that everyday teaching and learning in which individuals had to think about individual differences, assessment, development, the nature of a subject being taught, problem solving, and transfer of learning was the beginning to the field of educational psychology. These topics are important to education and as a result it is important to understanding human cognition, learning, and social perception.

Plato and Aristotle

Educational psychology dates back to the time of Aristotle and Plato. Plato and Aristotle researched individual differences in the field of education, training of the body and the cultivation of psycho-motor skills, the formation of good character, the possibilities and limits of moral education. Some other educational topics they spoke about were the effects of music, poetry, and the other arts on the development of individual, role of teacher, and the relations between teacher and student. Plato saw knowledge as an innate ability, which evolves through experience and understanding of the world. Such a statement has evolved into a continuing argument of nature vs. nurture in understanding conditioning and learning today. Aristotle observed the phenomenon of “association.” His four laws of association included succession, contiguity, similarity, and contrast. His studies examined recall and facilitated learning processes.

John Locke

John Locke followed by contrasting Plato’s theory of innate learning processes. Rather, he introduced the term “tabula rasa” meaning “blank slate.” Locke explained that learning was primarily understood through experience only, and we were all born without knowledge. Locke introduced this idea as “empiricism,” or the understanding that knowledge is only built on learning and experience.

In the late 1600s, John Locke advanced the hypothesis that people learn primarily from external forces. He believed that the mind was like a blank tablet (tabula rasa), and that successions of simple impressions give rise to complex ideas through association and reflection. Locke is credited with establishing “empiricism” as a criterion for testing the validity of knowledge, thus providing a conceptual framework for later development of experimental methodology in the natural and social sciences.

Before 1890

Philosophers of education such as Juan Vives, Johann Pestalozzi, Friedrich Fröbel, and Johann Herbart had examined, classified and judged the methods of education centuries before the beginnings of psychology in the late 1800s.

Juan Vives

Juan Vives (1493–1540) proposed induction as the method of study and believed in the direct observation and investigation of the study of nature. His studies focus of humanistic learning, which opposed scholasticism and was influenced by a variety of sources including philosophy, psychology, politics, religion, and history. He was one of the first to emphasize that the location of the school is important to learning. He suggested that the school should be located away from disturbing noises; the air quality should be good and there should be plenty of food for the students and teachers. Vives emphasized the importance of understanding individual differences of the students and suggested practice as an important tool for learning.

Vives introduced his educational ideas in his writing, “De anima et vita” in 1538. In this publication, Vives explores moral philosophy as a setting for his educational ideals; with this, he explains that the different parts of the soul (similar to that of Aristotle’s ideas) are each responsible for different operations, which function distinctively. The first book covers the different “souls”: “The Vegetative Soul,” this is the soul of nutrition, growth, and reproduction, “The Sensitive Soul,” which involves the five external senses; “The Cogitative soul,” which includes internal senses and cognitive facilities. The second book involves functions of the rational soul: mind, will, and memory. Lastly, the third book explains the analysis of emotions.

Johann Pestalozzi

Johann Pestalozzi (1746–1827), a Swiss educational reformer, emphasized the child rather than the content of the school. Pestalozzi fostered an educational reform backed by the idea that early education was crucial for children, and could be manageable for mothers. Eventually, this experience with early education would lead to a “wholesome person characterized by morality.” Pestalozzi has been acknowledged for opening institutions for education, writing books for mother’s teaching home education, and elementary books for students, mostly focusing on the kindergarten level. In his later years, he published teaching manuals and methods of teaching.

During the time of The Enlightenment, Pestalozzi’s ideals introduced “educationalisation.” This created the bridge between social issues and education by introducing the idea of social issues to be solved through education. Horlacher describes the most prominent example of this during The Enlightenment to be “improving agricultural production methods.”

Johann Herbart

Johann Herbart (1776–1841) is considered the father of educational psychology. He believed that learning was influenced by interest in the subject and the teacher. He thought that teachers should consider the students’ existing mental sets—what they already know—when presenting new information or material. Herbart came up with what are now known as the formal steps. The 5 steps that teachers should use are:

1. Review material that has already been learned by the student
2. Prepare the student for new material by giving them an overview of what they are learning next

3. Present the new material.
4. Relate the new material to the old material that has already been learned.
5. Show how the student can apply the new material and show the material they will learn next.

1890–1920

William James



William James

The period of 1890–1920 is considered the golden era of educational psychology where aspirations of the new discipline rested on the application of the scientific methods of observation and experimentation to educational problems. From 1840 to 1920 37 million people immigrated to the United States. This created an expansion of elementary schools and secondary schools. The increase in immigration also provided educational psychologists the opportunity to use intelligence testing to screen immigrants at Ellis Island. Darwinism influenced the beliefs of the prominent educational psychologists. Even in the earliest years of the discipline, educational psychologists recognized the limitations of this new approach. The pioneering American psychologist William James commented that:

Psychology is a science, and teaching is an art; and sciences never generate arts directly out of themselves. An intermediate inventive mind must make that application, by using its originality”.

James is the father of psychology in America but he also made contributions to educational psychology. In his famous series of lectures *Talks to Teachers on Psychology*, published in 1899 and now regarded as the first educational psychology textbook, James defines education as “the organization of acquired habits of conduct and tendencies to behavior”. He states that teachers should “train the pupil to behavior” so that he fits into the social and physical world. Teachers should also realize the importance of habit and instinct. They should present information that is clear and interesting and relate this new information and material to things the student already knows about. He also addresses important issues such as attention, memory, and association of ideas.

Alfred Binet

Alfred Binet published *Mental Fatigue* in 1898, in which he attempted to apply the experimental method to educational psychology. In this experimental method he advocated for two types of experiments, experiments done in the lab and experiments done in the classroom. In 1904 he was appointed the Minister of Public Education. This is when he began to look for a way to distinguish children with developmental disabilities. Binet strongly supported special education programs because he believed that “abnormality” could be cured. The Binet-Simon test was the first intelligence test and was the first to distinguish between “normal children” and those with developmental disabilities. Binet believed that it was important to study individual differences between age groups and children of the same age. He also believed that it was important for teachers to take into account individual students strengths and also the needs of the classroom as a whole when teaching and creating a good learning environment. He also believed that it was important to train teachers in observation so that they would be able to see individual differences among children and adjust the curriculum to the students. Binet also emphasized that practice of material was important. In 1916 Lewis Terman revised the Binet-Simon so that the average score was always 100. The test became known as the Stanford-Binet and was one of the most widely used tests of intelligence. Terman, unlike Binet, was interested in using intelligence test to identify gifted children who had high intelligence. In his longitudinal study of gifted children, who became known as the Termites, Terman found that gifted children become gifted adults.

Edward Thorndike

Edward Thorndike (1874–1949) supported the scientific movement in education. He based teaching practices on empirical evidence and measurement. Thorndike developed the theory of instrumental conditioning or the law of effect. The law of effect states that associations are strengthened when it is followed by something pleasing and associations are weakened when followed by something not pleasing. He also found that learning is done a little at a time or in increments, learning is an automatic process and all the principles of learning apply to all mammals. Thorndike’s research with Robert Woodworth on the theory of transfer found that learning one subject will only influence your ability to learn another subject if the subjects are similar. This discovery led to less emphasis on learning the classics because they found that studying the classics does not contribute to overall general intelligence. Thorndike was one of the first to say that individual differences in cognitive tasks were due to how many stimulus response patterns a person had rather than a general intellectual ability. He contributed word dictionaries that were scientifically based to determine the words and definitions used. The dictionaries were the first to take into consideration the users maturity level. He also integrated pictures and easier pronunciation guide into each of the definitions. Thorndike contributed arithmetic books based on learning theory. He made all the problems more realistic and relevant to what was being studied, not just to improve the general intelligence. He developed tests that were standardized to measure performance in school related subjects. His biggest contribution to testing was the CAVD intelligence test which used a multidimensional approach to intelligence and the first to use a ratio scale. His later work was on programmed instruction, mastery learning and computer-based learning:

If, by a miracle of mechanical ingenuity, a book could be so arranged that only to him who had done what was directed on page one would page two become visible, and so on, much that now requires personal instruction could be managed by print.

John Dewey

John Dewey (1859–1952) had a major influence on the development of progressive education in the United States. He believed that the classroom should prepare children to be good citizens and facilitate creative intelligence. He pushed for the creation of practical classes that could be applied outside of a school setting. He also thought that education should be student-oriented, not subject-oriented. For Dewey, education was a social experience that helped bring together generations of people. He stated that students learn by doing. He believed in an active mind that was able to be educated through observation, problem solving and enquiry. In his 1910 book *How We Think*, he emphasizes that material should be provided in a way that is stimulating and interesting to the student since it encourages original thought and problem solving. He also stated that material should be relative to the student's own experience.

“The material furnished by way of information should be relevant to a question that is vital in the students own experience”

Jean Piaget

Jean Piaget (1896–1980) developed the theory of cognitive development. The theory stated that intelligence developed in four different stages. The stages are the sensorimotor stage from birth to 2 years old, the preoperational state from 2 years old to 7 years old, the concrete operational stage from 7 years old to 10 years old, and formal operational stage from 11 years old and up. He also believed that learning was constrained to the child's cognitive development. Piaget influenced educational psychology because he was the first to believe that cognitive development was important and something that should be paid attention to in education. Most of the research on Piagetian theory was carried out by American educational psychologists.

1920–present

The number of people receiving a high school and college education increased dramatically from 1920 to 1960. Because very few jobs were available to teens coming out of eighth grade, there was an increase in high school attendance in the 1930s. The progressive movement in the United State took off at this time and led to the idea of progressive education. John Flanagan, an educational psychologist, developed tests for combat trainees and instructions in combat training. In 1954 the work of Kenneth Clark and his wife on the effects of segregation on black and white children was influential in the Supreme Court case *Brown v. Board of Education*. From the 1960s to present day, educational psychology has switched from a behaviorist perspective to a more cognitive based perspective because of the influence and development of cognitive psychology at this time.

Jerome Bruner

Jerome Bruner is notable for integrating Piaget's cognitive approaches into educational psychology. He advocated for discovery learning where teachers create a problem solving environment that allows the student to question, explore and experiment. In his book *The Process of Education* Bruner stated that the structure of the material and the cognitive abilities of the person are important in learning. He emphasized the importance of the subject matter. He also believed that how the subject was structured was important for the student's understanding of the subject and

it is the goal of the teacher to structure the subject in a way that was easy for the student to understand. In the early 1960s Bruner went to Africa to teach math and science to schoolchildren, which influenced his view as schooling as a cultural institution. Bruner was also influential in the development of MACOS, Man a Course of Study, which was an educational program that combined anthropology and science. The program explored human evolution and social behavior. He also helped with the development of the head start program. He was interested in the influence of culture on education and looked at the impact of poverty on educational development.

Benjamin Bloom

Benjamin Bloom (1913–1999) spent over 50 years at the University of Chicago, where he worked in the department of education. He believed that all students can learn. He developed taxonomy of educational objectives. The objectives were divided into three domains: cognitive, affective, and psychomotor. The cognitive domain deals with how we think. It is divided into categories that are on a continuum from easiest to more complex. The categories are knowledge or recall, comprehension application, analysis, synthesis and evaluation. The affective domain deals with emotions and has 5 categories. The categories are receiving phenomenon, responding to that phenomenon, valuing, organization, and internalizing values. The psychomotor domain deals with the development of motor skills, movement and coordination and has 7 categories, that also goes from simplest to complex. The 7 categories of the psychomotor domain are perception, set, guided response, mechanism, complex overt response, adaptation, and origination. The taxonomy provided broad educational objectives that could be used to help expand the curriculum to match the ideas in the taxonomy. The taxonomy is considered to have a greater influence internationally than in the United States. Internationally, the taxonomy is used in every aspect of education from training of the teachers to the development of testing material. Bloom believed in communicating clear learning goals and promoting an active student. He thought that teachers should provide feedback to the students on their strengths and weaknesses. Bloom also did research on college students and their problem solving processes. He found that they differ in understanding the basis of the problem and the ideas in the problem. He also found that students differ in process of problem solving in their approach and attitude toward the problem.

Nathaniel Gage

Nathaniel Gage is an important figure in educational psychology as his research focused on improving teaching and understanding the processes involved in teaching. He edited the book *Handbook of Research on Teaching* (1963), which helped develop early research in teaching and educational psychology. Gage founded the Stanford Center for Research and Development in Teaching, which contributed research on teaching as well as influencing the education of important educational psychologists.

Perspectives

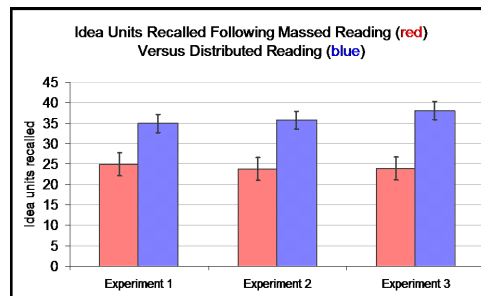
Behavioral

Applied behavior analysis, a research-based science utilizing behavioral principles of operant conditioning, is effective in a range of educational settings. For example, teachers can alter student behavior by systematically rewarding students who follow classroom rules with praise, stars, or

tokens exchangeable for sundry items. Despite the demonstrated efficacy of awards in changing behavior, their use in education has been criticized by proponents of self-determination theory, who claim that praise and other rewards undermine intrinsic motivation. There is evidence that tangible rewards decrease intrinsic motivation in specific situations, such as when the student already has a high level of intrinsic motivation to perform the goal behavior. But the results showing detrimental effects are counterbalanced by evidence that, in other situations, such as when rewards are given for attaining a gradually increasing standard of performance, rewards enhance intrinsic motivation. Many effective therapies have been based on the principles of applied behavior analysis, including pivotal response therapy which is used to treat autism spectrum disorders.

Cognitive

Among current educational psychologists, the cognitive perspective is more widely held than the behavioral perspective, perhaps because it admits causally related mental constructs such as traits, beliefs, memories, motivations and emotions. Cognitive theories claim that memory structures determine how information is perceived, processed, stored, retrieved and forgotten. Among the memory structures theorized by cognitive psychologists are separate but linked visual and verbal systems described by Allan Paivio's dual coding theory. Educational psychologists have used dual coding theory and cognitive load theory to explain how people learn from multimedia presentations.



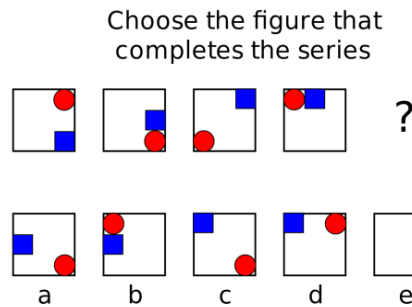
Three experiments reported by Krug, Davis and Glover demonstrated the advantage of delaying a 2nd reading of a text passage by one week (distributed) compared with no delay between readings (massed).

The spaced learning effect, a cognitive phenomenon strongly supported by psychological research, has broad applicability within education. For example, students have been found to perform better on a test of knowledge about a text passage when a second reading of the passage is delayed rather than immediate. Educational psychology research has confirmed the applicability to education of other findings from cognitive psychology, such as the benefits of using mnemonics for immediate and delayed retention of information.

Problem solving, according to prominent cognitive psychologists, is fundamental to learning. It resides as an important research topic in educational psychology. A student is thought to interpret a problem by assigning it to a schema retrieved from long-term memory. A problem students run into while reading is called "activation." This is when the student's representations of the text are present during working memory. This causes the student to read through the material without absorbing the information and being able to retain it. When working memory is absent from the readers representations of the working memory they experience something called "deactivation." When deactivation occurs, the student has an understanding of the material and is able to retain information. If deactivation occurs during the first reading, the reader does not need to undergo

deactivation in the second reading. The reader will only need to reread to get a “gist” of the text to spark their memory. When the problem is assigned to the wrong schema, the student’s attention is subsequently directed away from features of the problem that are inconsistent with the assigned schema. The critical step of finding a mapping between the problem and a pre-existing schema is often cited as supporting the centrality of analogical thinking to problem solving.

Cognitive View of Intelligence



An example of an item from a cognitive abilities test

Each person has an individual profile of characteristics, abilities and challenges that result from predisposition, learning and development. These manifest as individual differences in intelligence, creativity, cognitive style, motivation and the capacity to process information, communicate, and relate to others. The most prevalent disabilities found among school age children are attention deficit hyperactivity disorder (ADHD), learning disability, dyslexia, and speech disorder. Less common disabilities include intellectual disability, hearing impairment, cerebral palsy, epilepsy, and blindness.

Although theories of intelligence have been discussed by philosophers since Plato, intelligence testing is an invention of educational psychology, and is coincident with the development of that discipline. Continuing debates about the nature of intelligence revolve on whether intelligence can be characterized by a single factor known as general intelligence, multiple factors (e.g., Gardner’s theory of multiple intelligences), or whether it can be measured at all. In practice, standardized instruments such as the Stanford-Binet IQ test and the WISC are widely used in economically developed countries to identify children in need of individualized educational treatment. Children classified as gifted are often provided with accelerated or enriched programs. Children with identified deficits may be provided with enhanced education in specific skills such as phonological awareness. In addition to basic abilities, the individual’s personality traits are also important, with people higher in conscientiousness and hope attaining superior academic achievements, even after controlling for intelligence and past performance.

Developmental

Developmental psychology, and especially the psychology of cognitive development, opens a special perspective for educational psychology. This is so because education and the psychology of cognitive development converge on a number of crucial assumptions. First, the psychology of cognitive development defines human cognitive competence at successive phases of development. Education aims to help students acquire knowledge and develop skills which are compatible with

their understanding and problem-solving capabilities at different ages. Thus, knowing the students' level on a developmental sequence provides information on the kind and level of knowledge they can assimilate, which, in turn, can be used as a frame for organizing the subject matter to be taught at different school grades. This is the reason why Piaget's theory of cognitive development was so influential for education, especially mathematics and science education. In the same direction, the neo-Piagetian theories of cognitive development suggest that in addition to the concerns above, sequencing of concepts and skills in teaching must take account of the processing and working memory capacities that characterize successive age levels.

Second, the psychology of cognitive development involves understanding how cognitive change takes place and recognizing the factors and processes which enable cognitive competence to develop. Education also capitalizes on cognitive change, because the construction of knowledge presupposes effective teaching methods that would move the student from a lower to a higher level of understanding. Mechanisms such as reflection on actual or mental actions vis-à-vis alternative solutions to problems, tagging new concepts or solutions to symbols that help one recall and mentally manipulate them are just a few examples of how mechanisms of cognitive development may be used to facilitate learning.

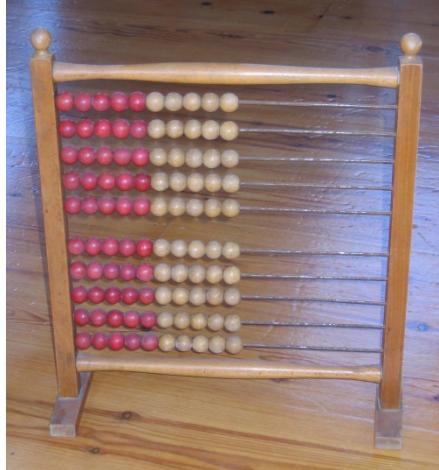
Finally, the psychology of cognitive development is concerned with individual differences in the organization of cognitive processes and abilities, in their rate of change, and in their mechanisms of change. The principles underlying intra- and inter-individual differences could be educationally useful, because knowing how students differ in regard to the various dimensions of cognitive development, such as processing and representational capacity, self-understanding and self-regulation, and the various domains of understanding, such as mathematical, scientific, or verbal abilities, would enable the teacher to cater for the needs of the different students so that no one is left behind.

Constructivist

Constructivism is a category of learning theory in which emphasis is placed on the agency and prior "knowing" and experience of the learner, and often on the social and cultural determinants of the learning process. Educational psychologists distinguish individual (or psychological) constructivism, identified with Piaget's theory of cognitive development, from social constructivism. A dominant influence on the latter type is Lev Vygotsky's work on sociocultural learning, describing how interactions with adults, more capable peers, and cognitive tools are internalized to form mental constructs. Elaborating on Vygotsky's theory, Jerome Bruner and other educational psychologists developed the important concept of instructional scaffolding, in which the social or information environment offers supports for learning that are gradually withdrawn as they become internalized.

Conditioning and Learning

To understand the characteristics of learners in childhood, adolescence, adulthood, and old age, educational psychology develops and applies theories of human development. Often represented as stages through which people pass as they mature, developmental theories describe changes in mental abilities (cognition), social roles, moral reasoning, and beliefs about the nature of knowledge.



An abacus provides concrete experiences for learning abstract concepts.

For example, educational psychologists have conducted research on the instructional applicability of Jean Piaget's theory of development, according to which children mature through four stages of cognitive capability. Piaget hypothesized that children are not capable of abstract logical thought until they are older than about 11 years, and therefore younger children need to be taught using concrete objects and examples. Researchers have found that transitions, such as from concrete to abstract logical thought, do not occur at the same time in all domains. A child may be able to think abstractly about mathematics, but remain limited to concrete thought when reasoning about human relationships. Perhaps Piaget's most enduring contribution is his insight that people actively construct their understanding through a self-regulatory process.

Piaget proposed a developmental theory of moral reasoning in which children progress from a naïve understanding of morality based on behavior and outcomes to a more advanced understanding based on intentions. Piaget's views of moral development were elaborated by Kohlberg into a stage theory of moral development. There is evidence that the moral reasoning described in stage theories is not sufficient to account for moral behavior. For example, other factors such as modeling (as described by the social cognitive theory of morality) are required to explain bullying.

Rudolf Steiner's model of child development interrelates physical, emotional, cognitive, and moral development in developmental stages similar to those later described by Piaget.

Developmental theories are sometimes presented not as shifts between qualitatively different stages, but as gradual increments on separate dimensions. Development of epistemological beliefs (beliefs about knowledge) have been described in terms of gradual changes in people's belief in: certainty and permanence of knowledge, fixedness of ability, and credibility of authorities such as teachers and experts. People develop more sophisticated beliefs about knowledge as they gain in education and maturity.

Motivation

Motivation is an internal state that activates, guides and sustains behavior. Motivation can have several impacting effects on how students learn and how they behave towards subject matter:

- Provide direction towards goals
- Enhance cognitive processing abilities and performance
- Direct behavior toward particular goals
- Lead to increased effort and energy
- Increase initiation of and persistence in activities

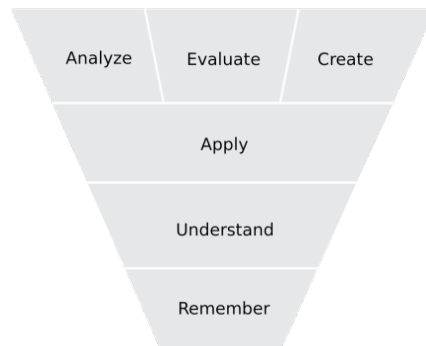
Educational psychology research on motivation is concerned with the volition or will that students bring to a task, their level of interest and intrinsic motivation, the personally held goals that guide their behavior, and their belief about the causes of their success or failure. As intrinsic motivation deals with activities that act as their own rewards, extrinsic motivation deals with motivations that are brought on by consequences or punishments. A form of attribution theory developed by Bernard Weiner describes how students' beliefs about the causes of academic success or failure affect their emotions and motivations. For example, when students attribute failure to lack of ability, and ability is perceived as uncontrollable, they experience the emotions of shame and embarrassment and consequently decrease effort and show poorer performance. In contrast, when students attribute failure to lack of effort, and effort is perceived as controllable, they experience the emotion of guilt and consequently increase effort and show improved performance.

The self-determination theory (SDT) was developed by psychologists Edward Deci and Richard Ryan. SDT focuses on the importance of intrinsic and extrinsic motivation in driving human behavior and posits inherent growth and development tendencies. It emphasizes the degree to which an individual's behavior is self-motivated and self-determined. When applied to the realm of education, the self-determination theory is concerned primarily with promoting in students an interest in learning, a value of education, and a confidence in their own capacities and attributes.

Motivational theories also explain how learners' goals affect the way they engage with academic tasks. Those who have *mastery goals* strive to increase their ability and knowledge. Those who have *performance approach goals* strive for high grades and seek opportunities to demonstrate their abilities. Those who have *performance avoidance goals* are driven by fear of failure and avoid situations where their abilities are exposed. Research has found that mastery goals are associated with many positive outcomes such as persistence in the face of failure, preference for challenging tasks, creativity and intrinsic motivation. Performance avoidance goals are associated with negative outcomes such as poor concentration while studying, disorganized studying, less self-regulation, shallow information processing and test anxiety. Performance approach goals are associated with positive outcomes, and some negative outcomes such as an unwillingness to seek help and shallow information processing.

Locus of control is a salient factor in the successful academic performance of students. During the 1970s and '80s, Cassandra B. Whyte did significant educational research studying locus of control as related to the academic achievement of students pursuing higher education coursework. Much of her educational research and publications focused upon the theories of Julian B. Rotter in regard to the importance of internal control and successful academic performance. Whyte reported that individuals who perceive and believe that their hard work may lead to more successful academic outcomes, instead of depending on luck or fate, persist and achieve academically at a higher level. Therefore, it is important to provide education and counseling in this regard.

Technology



Bloom's taxonomy of educational objectives: categories in the cognitive domain

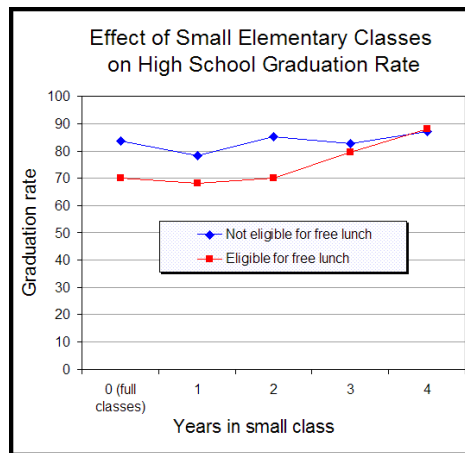
Instructional design, the systematic design of materials, activities and interactive environments for learning, is broadly informed by educational psychology theories and research. For example, in defining learning goals or objectives, instructional designers often use a taxonomy of educational objectives created by Benjamin Bloom and colleagues. Bloom also researched mastery learning, an instructional strategy in which learners only advance to a new learning objective after they have mastered its prerequisite objectives. Bloom discovered that a combination of mastery learning with one-to-one tutoring is highly effective, producing learning outcomes far exceeding those normally achieved in classroom instruction. Gagné, another psychologist, had earlier developed an influential method of task analysis in which a terminal learning goal is expanded into a hierarchy of learning objectives connected by prerequisite relationships. The following list of technological resources incorporate computer-aided instruction and intelligence for educational psychologists and their students:

- Intelligent tutoring system
- Cognitive tutor
- Cooperative learning
- Collaborative learning
- Problem-based learning
- Computer-supported collaborative learning
- Constructive alignment

Technology is essential to the field of educational psychology, not only for the psychologist themselves as far as testing, organization, and resources, but also for students. Educational Psychologists whom reside in the K- 12 setting focus the majority of their time with Special Education students. It has been found that students with disabilities learning through technology such as iPad applications and videos are more engaged and motivated to learn in the classroom setting. Liu et al. explain that learning-based technology allows for students to be more focused, and learning is more efficient with learning technologies. The authors explain that learning technology also allows for students with social- emotional disabilities to participate in distance learning.

Applications

Teaching



A class size experiment in the United States found that attending small classes for 3 or more years in the early grades increased high school graduation of students from low income families.

Research on classroom management and pedagogy is conducted to guide teaching practice and form a foundation for teacher education programs. The goals of classroom management are to create an environment conducive to learning and to develop students' self-management skills. More specifically, classroom management strives to create positive teacher–student and peer relationships, manage student groups to sustain on-task behavior, and use counseling and other psychological methods to aid students who present persistent psychosocial problems.

Introductory educational psychology is a commonly required area of study in most North American teacher education programs. When taught in that context, its content varies, but it typically emphasizes learning theories (especially cognitively oriented ones), issues about motivation, assessment of students' learning, and classroom management. A developing Wikibook about educational psychology gives more detail about the educational psychology topics that are typically presented in preservice teacher education.

- Special education
- Secondary Education
- Lesson plan

Counseling

Training

In order to become an educational psychologist, students can complete an undergraduate degree in their choice. They then must go to graduate school to study education psychology, counseling psychology, and/ or school counseling. Most students today are also receiving their doctorate degrees in order to hold the “psychologist” title. Educational psychologists work in a variety of settings. Some work in university settings where they carry out research on the cognitive and social processes of human development, learning and education. Educational psychologists may also

work as consultants in designing and creating educational materials, classroom programs and on-line courses. Educational psychologists who work in k–12 school settings (closely related are school psychologists in the US and Canada) are trained at the master's and doctoral levels. In addition to conducting assessments, school psychologists provide services such as academic and behavioral intervention, counseling, teacher consultation, and crisis intervention. However, school psychologists are generally more individual-oriented towards students.

Many colleges and high schools are starting to teach students how to teach students in the classroom. In colleges Educational Psychology is starting to be a general education requirement.

Employment Outlook

Employment for psychologists in the United States is expected to grow faster than most occupations through the year 2014, with anticipated growth of 18–26%. One in four psychologists are employed in educational settings. In the United States, the median salary for psychologists in primary and secondary schools is US\$58,360 as of May 2004. Colleges offer and allow someone to obtain an PHD in educational Psychology.

In recent decades the participation of women as professional researchers in North American educational psychology has risen dramatically.

Methods of Research

Educational psychology, as much as any other field of psychology heavily relies on a balance of pure observation and quantitative methods in psychology. The study of education generally combines the studies of history, sociology, and ethics with theoretical approaches. Smeyers and Depaepe explain that historically, the study of education and child rearing have been associated with the interests of policymakers and practitioners within the educational field, however, the recent shift to sociology and psychology has opened the door for new findings in education as a social science. Now being its own academic discipline, educational psychology has proven to be helpful for social science researchers.

Quantitative research is the backing to most observable phenomena in psychology. This involves observing, creating, and understanding a distribution of data based upon the studies subject matter. Researchers use particular variables to interpret their data distributions from their research and employ statistics as a way of creating data tables and analyzing their data. Psychology has moved from the “common sense” reputations initially posed by Thomas Reid to the methodology approach comparing independent and dependent variables through natural observation, experiments, or combinations of the two. Though results are still, with statistical methods, objectively true based upon significance variables or p-values.

Philosophy of Education

Philosophy of education can refer either to the application of philosophy to the problem of education, examining the definition, goals and meaning of education, or to any particular vision of or approach to education.

As an academic field, philosophy of education is “the philosophical study of education and its problems...its central subject matter is education, and its methods are those of philosophy”. “The philosophy of education may be either the philosophy of the process of education or the philosophy of the discipline of education. That is, it may be part of the discipline in the sense of being concerned with the aims, forms, methods, or results of the process of educating or being educated; or it may be metadisciplinary in the sense of being concerned with the concepts, aims, and methods of the discipline.” As such, it is both part of the field of education and a field of applied philosophy, drawing from fields of metaphysics, epistemology, axiology and the philosophical approaches (speculative, prescriptive, and/or analytic) to address questions in and about pedagogy, education policy, and curriculum, as well as the process of learning, to name a few. For example, it might study what constitutes upbringing and education, the values and norms revealed through upbringing and educational practices, the limits and legitimization of education as an academic discipline, and the relation between educational theory and practice.

Instead of being taught in philosophy departments, philosophy of education is usually housed in departments or colleges of education, similar to how philosophy of law is generally taught in law schools. The multiple ways of conceiving education coupled with the multiple fields and approaches of philosophy make philosophy of education not only a very diverse field but also one that is not easily defined. Although there is overlap, philosophy of education should not be conflated with educational theory, which is not defined specifically by the application of philosophy to questions in education. Philosophy of education also should not be confused with philosophy education, the practice of teaching and learning the subject of philosophy.

Philosophy of education can also be understood not as an academic discipline but as a normative educational theory that unifies pedagogy, curriculum, learning theory, and the purpose of education and is grounded in specific metaphysical, epistemological, and axiological assumptions. These theories are also called educational philosophies. For example, a teacher might be said to follow a perennialist educational philosophy or to follow a perennialist philosophy of education.

Philosophy of Education

Idealism

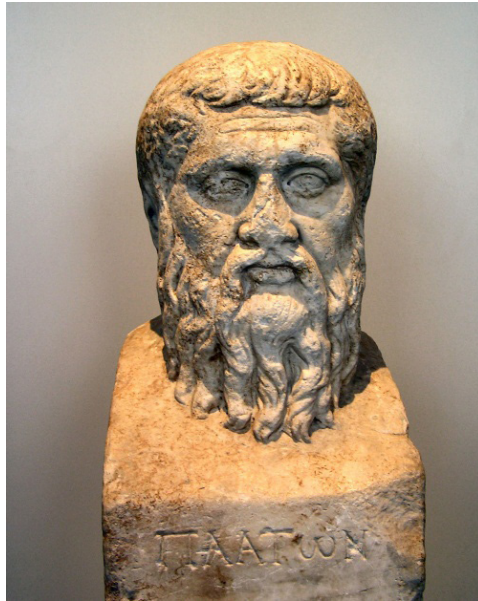
Plato

Date: 424/423 BC – 348/347 BC

Plato’s educational philosophy was grounded in his vision of the ideal *Republic*, wherein the individual was best served by being subordinated to a just society. He advocated removing children from their mothers’ care and raising them as wards of the state, with great care being taken to differentiate children suitable to the various castes, the highest receiving the most education, so that they could act as guardians of the city and care for the less able. Education would be holistic, including facts, skills, physical discipline, and music and art, which he considered the highest form of endeavor.

Plato believed that talent was distributed non-genetically and thus must be found in children born in any social class. He built on this by insisting that those suitably gifted were to be trained by the

state so that they might be qualified to assume the role of a ruling class. What this established was essentially a system of selective public education premised on the assumption that an educated minority of the population were, by virtue of their education (and inborn educability), sufficient for healthy governance.



Inscribed herma of Plato. (Berlin, Altes Museum).

Plato's writings contain some of the following ideas: Elementary education would be confined to the guardian class till the age of 18, followed by two years of compulsory military training and then by higher education for those who qualified. While elementary education made the soul responsive to the environment, higher education helped the soul to search for truth which illuminated it. Both boys and girls receive the same kind of education. Elementary education consisted of music and gymnastics, designed to train and blend gentle and fierce qualities in the individual and create a harmonious person.

At the age of 20, a selection was made. The best students would take an advanced course in mathematics, geometry, astronomy and harmonics. The first course in the scheme of higher education would last for ten years. It would be for those who had a flair for science. At the age of 30 there would be another selection; those who qualified would study dialectics and metaphysics, logic and philosophy for the next five years. After accepting junior positions in the army for 15 years, a man would have completed his theoretical and practical education by the age of 50.

Immanuel Kant

Date: 1724–1804

Immanuel Kant believed that education differs from training in that the former involves thinking whereas the latter does not. In addition to educating reason, of central importance to him was the development of character and teaching of moral maxims. Kant was a proponent of public education and of learning by doing.

Georg Wilhelm Friedrich Hegel

Date: 1770–1831

Realism

Aristotle



Bust of Aristotle. Roman copy after a Greek bronze original by Lysippos from 330 B.C.

Date: 384 BC – 322 BC

Only fragments of Aristotle's treatise *On Education* are still in existence. We thus know of his philosophy of education primarily through brief passages in other works. Aristotle considered human nature, habit and reason to be equally important forces to be cultivated in education. Thus, for example, he considered repetition to be a key tool to develop good habits. The teacher was to lead the student systematically; this differs, for example, from Socrates' emphasis on questioning his listeners to bring out their own ideas (though the comparison is perhaps incongruous since Socrates was dealing with adults).

Aristotle placed great emphasis on balancing the theoretical and practical aspects of subjects taught. Subjects he explicitly mentions as being important included reading, writing and mathematics; music; physical education; literature and history; and a wide range of sciences. He also mentioned the importance of play.

One of education's primary missions for Aristotle, perhaps its most important, was to produce good and virtuous citizens for the polis. *All who have meditated on the art of governing mankind have been convinced that the fate of empires depends on the education of youth.*

Avicenna

Date: 980 AD – 1037 AD

In the medieval Islamic world, an elementary school was known as a *maktab*, which dates back to at least the 10th century. Like madrasahs (which referred to higher education), a *maktab* was often attached to a mosque. In the 11th century, Ibn Sina (known as *Avicenna* in the West), wrote a chapter dealing with the *maktab* entitled "The Role of the Teacher in the Training and Upbringing

of Children”, as a guide to teachers working at *maktab* schools. He wrote that children can learn better if taught in classes instead of individual tuition from private tutors, and he gave a number of reasons for why this is the case, citing the value of competition and emulation among pupils as well as the usefulness of group discussions and debates. Ibn Sina described the curriculum of a *maktab* school in some detail, describing the curricula for two stages of education in a *maktab* school.

Ibn Sina wrote that children should be sent to a *maktab* school from the age of 6 and be taught primary education until they reach the age of 14. During which time, he wrote that they should be taught the Qur’an, Islamic metaphysics, language, literature, Islamic ethics, and manual skills (which could refer to a variety of practical skills).

Ibn Sina refers to the secondary education stage of *maktab* schooling as the period of specialization, when pupils should begin to acquire manual skills, regardless of their social status. He writes that children after the age of 14 should be given a choice to choose and specialize in subjects they have an interest in, whether it was reading, manual skills, literature, preaching, medicine, geometry, trade and commerce, craftsmanship, or any other subject or profession they would be interested in pursuing for a future career. He wrote that this was a transitional stage and that there needs to be flexibility regarding the age in which pupils graduate, as the student’s emotional development and chosen subjects need to be taken into account.

The empiricist theory of ‘tabula rasa’ was also developed by Ibn Sina. He argued that the “human intellect at birth is rather like a *tabula rasa*, a pure potentiality that is actualized through education and comes to know” and that knowledge is attained through “empirical familiarity with objects in this world from which one abstracts universal concepts” which is developed through a “syllogistic method of reasoning; observations lead to prepositional statements, which when compounded lead to further abstract concepts.” He further argued that the intellect itself “possesses levels of development from the material intellect (*al-‘aql al-hayulani*), that potentiality that can acquire knowledge to the active intellect (*al-‘aql al-fa‘il*), the state of the human intellect in conjunction with the perfect source of knowledge.”

Ibn Tufail

Date: c. 1105 – 1185

In the 12th century, the Andalusian-Arabian philosopher and novelist Ibn Tufail (known as “Abubacer” or “Ebn Tophail” in the West) demonstrated the empiricist theory of ‘tabula rasa’ as a thought experiment through his Arabic philosophical novel, *Hayy ibn Yaqzan*, in which he depicted the development of the mind of a feral child “from a tabula rasa to that of an adult, in complete isolation from society” on a desert island, through experience alone. The Latin translation of his philosophical novel, *Philosophus Autodidactus*, published by Edward Pococke the Younger in 1671, had an influence on John Locke’s formulation of tabula rasa in “An Essay Concerning Human Understanding”.

John Locke

Date: 1632–1704

In *Some Thoughts Concerning Education* and *Of the Conduct of the Understanding* Locke composed an outline on how to educate this mind in order to increase its powers and activity:

“The business of education is not, as I think, to make them perfect in any one of the sciences, but so to open and dispose their minds as may best make them capable of any, when they shall apply themselves to it.”

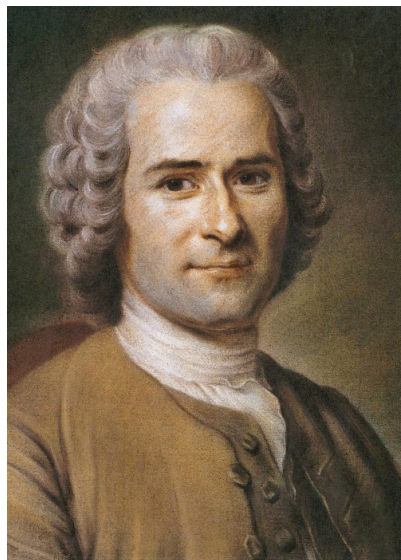
“If men are for a long time accustomed only to one sort or method of thoughts, their minds grow stiff in it, and do not readily turn to another. It is therefore to give them this freedom, that I think they should be made to look into all sorts of knowledge, and exercise their understandings in so wide a variety and stock of knowledge. But I do not propose it as a variety and stock of knowledge, but a variety and freedom of thinking, as an increase of the powers and activity of the mind, not as an enlargement of its possessions.”

Locke expressed the belief that education maketh the man, or, more fundamentally, that the mind is an “empty cabinet”, with the statement, “I think I may say that of all the men we meet with, nine parts of ten are what they are, good or evil, useful or not, by their education.”

Locke also wrote that “the little and almost insensible impressions on our tender infancies have very important and lasting consequences.” He argued that the “associations of ideas” that one makes when young are more important than those made later because they are the foundation of the self: they are, put differently, what first mark the *tabula rasa*. In his *Essay*, in which is introduced both of these concepts, Locke warns against, for example, letting “a foolish maid” convince a child that “goblins and sprites” are associated with the night for “darkness shall ever afterwards bring with it those frightful ideas, and they shall be so joined, that he can no more bear the one than the other.”

“Associationism”, as this theory would come to be called, exerted a powerful influence over eighteenth-century thought, particularly educational theory, as nearly every educational writer warned parents not to allow their children to develop negative associations. It also led to the development of psychology and other new disciplines with David Hartley’s attempt to discover a biological mechanism for associationism in his *Observations on Man* (1749).

Jean-Jacques Rousseau



Jean-Jacques Rousseau by Maurice Quentin de La Tour

Date: 1712–1778

Rousseau, though he paid his respects to Plato's philosophy, rejected it as impractical due to the decayed state of society. Rousseau also had a different theory of human development; where Plato held that people are born with skills appropriate to different castes (though he did not regard these skills as being inherited), Rousseau held that there was one developmental process common to all humans. This was an intrinsic, natural process, of which the primary behavioral manifestation was curiosity. This differed from Locke's 'tabula rasa' in that it was an active process deriving from the child's nature, which drove the child to learn and adapt to its surroundings.

Rousseau wrote in his book *Emile* that all children are perfectly designed organisms, ready to learn from their surroundings so as to grow into virtuous adults, but due to the malign influence of corrupt society, they often fail to do so. Rousseau advocated an educational method which consisted of removing the child from society—for example, to a country home—and alternately conditioning him through changes to his environment and setting traps and puzzles for him to solve or overcome.

Rousseau was unusual in that he recognized and addressed the potential of a problem of legitimation for teaching. He advocated that adults always be truthful with children, and in particular that they never hide the fact that the basis for their authority in teaching was purely one of physical coercion: "I'm bigger than you." Once children reached the age of reason, at about 12, they would be engaged as free individuals in the ongoing process of their own.

He once said that a child should grow up without adult interference and that the child must be guided to suffer from the experience of the natural consequences of his own acts or behaviour. When he experiences the consequences of his own acts, he advises himself.

"Rousseau divides development into five stages (a book is devoted to each). Education in the first two stages seeks to the senses: only when *Émile* is about 12 does the tutor begin to work to develop his mind. Later, in Book 5, Rousseau examines the education of Sophie (whom *Émile* is to marry). Here he sets out what he sees as the essential differences that flow from sex. 'The man should be strong and active; the woman should be weak and passive' (Everyman edn: 322). From this difference comes a contrasting education. They are not to be brought up in ignorance and kept to housework: Nature means them to think, to will, to love to cultivate their minds as well as their persons; she puts these weapons in their hands to make up for their lack of strength and to enable them to direct the strength of men. They should learn many things, but only such things as suitable' (Everyman edn.: 327)." *Émile*

Mortimer Jerome Adler

Date: 1902–2001

Mortimer Jerome Adler was an American philosopher, educator, and popular author. As a philosopher he worked within the Aristotelian and Thomistic traditions. He lived for the longest stretches in New York City, Chicago, San Francisco, and San Mateo, California. He worked for Columbia University, the University of Chicago, Encyclopædia Britannica, and Adler's own Institute for Philosophical Research. Adler was married twice and had four children. Adler was a proponent of educational perennialism.

Harry S. Broudy

Date: 1905–1998

Broudy's philosophical views were based on the tradition of classical realism, dealing with truth, goodness, and beauty. However he was also influenced by the modern philosophy existentialism and instrumentalism. In his textbook *Building a Philosophy of Education* he has two major ideas that are the main points to his philosophical outlook: The first is truth and the second is universal structures to be found in humanity's struggle for education and the good life. Broudy also studied issues on society's demands on school. He thought education would be a link to unify the diverse society and urged the society to put more trust and a commitment to the schools and a good education.

Scholasticism

Thomas Aquinas



Thomas Aquinas by Carlo Crivelli, 1476)

Date: c. 1225 – 1274

John Milton

Date: 1608–1674

The objective of medieval education was an overtly religious one, primarily concerned with uncovering transcendental truths that would lead a person back to God through a life of moral and religious choice (Kreeft 15). The vehicle by which these truths were uncovered was dialectic:

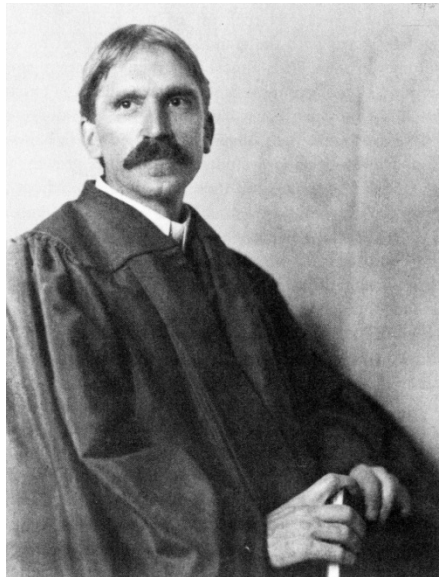
To the medieval mind, debate was a fine art, a serious science, and a fascinating entertainment, much more than it is to the modern mind, because the medievals believed, like Socrates, that dia-

lectic could uncover truth. Thus a 'scholastic disputation' was not a personal contest in cleverness, nor was it 'sharing opinions'; it was a shared journey of discovery (Kreeft 14–15).

Pragmatism

John Dewey

Date: 1859–1952



John Dewey in 1902.

In *Democracy and Education: An Introduction to the Philosophy of Education*, Dewey stated that education, in its broadest sense, is the means of the “social continuity of life” given the “primary ineluctable facts of the birth and death of each one of the constituent members in a social group”. Education is therefore a necessity, for “the life of the group goes on.” Dewey was a proponent of Educational Progressivism and was a relentless campaigner for reform of education, pointing out that the authoritarian, strict, pre-ordained knowledge approach of modern traditional education was too concerned with delivering knowledge, and not enough with understanding students’ actual experiences.

William James

Date: 1842–1910

William Heard Kilpatrick

Date: 1871–1965

William Heard Kilpatrick was a US American philosopher of education and a colleague and a successor of John Dewey. He was a major figure in the progressive education movement of the early 20th century. Kilpatrick developed the Project Method for early childhood education, which was a form of Progressive Education organized curriculum and classroom activities around a subject’s

central theme. He believed that the role of a teacher should be that of a “guide” as opposed to an authoritarian figure. Kilpatrick believed that children should direct their own learning according to their interests and should be allowed to explore their environment, experiencing their learning through the natural senses. Proponents of Progressive Education and the Project Method reject traditional schooling that focuses on memorization, rote learning, strictly organized classrooms (desks in rows; students always seated), and typical forms of assessment.

Nel Noddings

Date: 1929–

Noddings’ first sole-authored book *Caring: A Feminine Approach to Ethics and Moral Education* (1984) followed close on the 1982 publication of Carol Gilligan’s ground-breaking work in the ethics of care *In a Different Voice*. While her work on ethics continued, with the publication of *Women and Evil* (1989) and later works on moral education, most of her later publications have been on the philosophy of education and educational theory. Her most significant works in these areas have been *Educating for Intelligent Belief or Unbelief* (1993) and *Philosophy of Education* (1995).

Richard Rorty

Date: 1931–2007

Analytic Philosophy

G.E Moore (1873–1858)

Bertrand Russell (1872–1970)

Gottlob Frege (1848–1925)

Richard Stanley Peters (1919–2011)

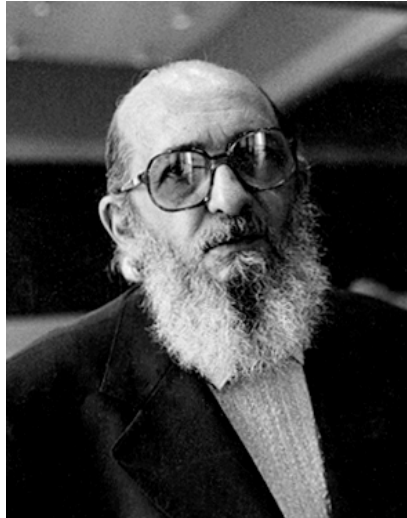
Date: 1919–

Existentialist

The existentialist sees the world as one’s personal subjectivity, where goodness, truth, and reality are individually defined. Reality is a world of existing, truth subjectively chosen, and goodness a matter of freedom. The subject matter of existentialist classrooms should be a matter of personal choice. Teachers view the individual as an entity within a social context in which the learner must confront others’ views to clarify his or her own. Character development emphasizes individual responsibility for decisions. Real answers come from within the individual, not from outside authority. Examining life through authentic thinking involves students in genuine learning experiences. Existentialists are opposed to thinking about students as objects to be measured, tracked, or standardized. Such educators want the educational experience to focus on creating opportunities for self-direction and self-actualization. They start with the student, rather than on curriculum content.

Critical Theory

Paulo Freire



Paulo Freire

Date: 1921–1997

A Brazilian committed to the cause of educating the impoverished peasants of his nation and collaborating with them in the pursuit of their liberation from what he regarded as “oppression,” Freire is best known for his attack on what he called the “banking concept of education,” in which the student was viewed as an empty account to be filled by the teacher. Freire also suggests that a deep reciprocity be inserted into our notions of teacher and student; he comes close to suggesting that the teacher-student dichotomy be completely abolished, instead promoting the roles of the participants in the classroom as the teacher-student (a teacher who learns) and the student-teacher (a learner who teaches). In its early, strong form this kind of classroom has sometimes been criticized on the grounds that it can mask rather than overcome the teacher’s authority.

Aspects of the Freirian philosophy have been highly influential in academic debates over “participatory development” and development more generally. Freire’s emphasis on what he describes as “emancipation” through interactive participation has been used as a rationale for the participatory focus of development, as it is held that ‘participation’ in any form can lead to empowerment of poor or marginalised groups. Freire was a proponent of critical pedagogy. “He participated in the import of European doctrines and ideas into Brazil, assimilated them to the needs of a specific socio-economic situation, and thus expanded and refocused them in a thought-provoking way”

Other Continental thinkers

Martin Heidegger

Date: 1889–1976

Heidegger’s philosophizing about education was primarily related to higher education. He believed that teaching and research in the university should be unified and aim towards testing and inter-

rogating the “ontological assumptions presuppositions which implicitly guide research in each domain of knowledge.”

Hans-Georg Gadamer

Date: 1900–2002

Jean-François Lyotard

Date: 1924–1998

Michel Foucault

Date: 1926–1984

Normative Educational Philosophies

“Normative philosophies or theories of education may make use of the results of [philosophical thought] and of factual inquiries about human beings and the psychology of learning, but in any case they propound views about what education should be, what dispositions it should cultivate, why it ought to cultivate them, how and in whom it should do so, and what forms it should take. In a full-fledged philosophical normative theory of education, besides analysis of the sorts described, there will normally be propositions of the following kinds:

1. Basic normative premises about what is good or right;
2. Basic factual premises about humanity and the world;
3. Conclusions, based on these two kinds of premises, about the dispositions education should foster;
4. Further factual premises about such things as the psychology of learning and methods of teaching; and
5. Further conclusions about such things as the methods that education should use.”

Perennialism

Perennialists believe that one should teach the things that one deems to be of everlasting importance to all people everywhere. They believe that the most important topics develop a person. Since details of fact change constantly, these cannot be the most important. Therefore, one should teach principles, not facts. Since people are human, one should teach first about humans, not machines or techniques. Since people are people first, and workers second if at all, one should teach liberal topics first, not vocational topics. The focus is primarily on teaching reasoning and wisdom rather than facts, the liberal arts rather than vocational training.

Allan Bloom

Date: 1930–1992

Bloom, a professor of political science at the University of Chicago, argued for a traditional Great Books-based liberal education in his lengthy essay *The Closing of the American Mind*.



Alexander Sutherland Neill

Progressivism

Educational progressivism is the belief that education must be based on the principle that humans are social animals who learn best in real-life activities with other people. Progressivists, like proponents of most educational theories, claim to rely on the best available scientific theories of learning. Most progressive educators believe that children learn as if they were scientists, following a process similar to John Dewey's model of learning: 1) Become aware of the problem. 2) Define the problem. 3) Propose hypotheses to solve it. 4) Evaluate the consequences of the hypotheses from one's past experience. 5) Test the likeliest solution.

Jean Piaget

Date: 1896–1980

Jean Piaget was a Swiss developmental psychologist known for his epistemological studies with children. His theory of cognitive development and epistemological view are together called “genetic epistemology”. Piaget placed great importance on the education of children. As the Director of the International Bureau of Education, he declared in 1934 that “only education is capable of saving our societies from possible collapse, whether violent, or gradual.” Piaget created the International Centre for Genetic Epistemology in Geneva in 1955 and directed it until 1980. According to Ernst von Glasersfeld, Jean Piaget is “the great pioneer of the constructivist theory of knowing.”

Jean Piaget described himself as an epistemologist, interested in the process of the qualitative development of knowledge. As he says in the introduction of his book “Genetic Epistemology” (ISBN 978-0-393-00596-7): “*What the genetic epistemology proposes is discovering the roots of the different varieties of knowledge, since its elementary forms, following to the next levels, including also the scientific knowledge.*”

Jerome Bruner

Date: 1915–

Another important contributor to the inquiry method in education is Bruner. His books *The Process of Education* and *Toward a Theory of Instruction* are landmarks in conceptualizing learning and curriculum development. He argued that any subject can be taught in some intellectually honest form to any child at any stage of development. This notion was an underpinning for his concept of the spiral curriculum which posited the idea that a curriculum should revisit basic ideas, building on them until the student had grasped the full formal concept. He emphasized intuition as a neglected but essential feature of productive thinking. He felt that interest in the material being learned was the best stimulus for learning rather than external motivation such as grades. Bruner developed the concept of discovery learning which promoted learning as a process of constructing new ideas based on current or past knowledge. Students are encouraged to discover facts and relationships and continually build on what they already know.

Essentialism

Educational essentialism is an educational philosophy whose adherents believe that children should learn the traditional basic subjects and that these should be learned thoroughly and rigorously. An essentialist program normally teaches children progressively, from less complex skills to more complex.

William Chandler Bagley

Date: 1874–1946

William Chandler Bagley taught in elementary schools before becoming a professor of education at the University of Illinois, where he served as the Director of the School of Education from 1908 until 1917. He was a professor of education at Teachers College, Columbia, from 1917 to 1940. An opponent of pragmatism and progressive education, Bagley insisted on the value of knowledge for its own sake, not merely as an instrument, and he criticized his colleagues for their failure to emphasize systematic study of academic subjects. Bagley was a proponent of educational essentialism.

Social Reconstructionism and Critical Pedagogy

Critical pedagogy is an “educational movement, guided by passion and principle, to help students develop consciousness of freedom, recognize authoritarian tendencies, and connect knowledge to power and the ability to take constructive action.” Based in Marxist theory, critical pedagogy draws on radical democracy, anarchism, feminism, and other movements for social justice.

George Counts

Date: 1889–1974

Maria Montessori



Maria Montessori and Samuel Sidney McClure

Date: 1870–1952

The Montessori method arose from Dr. Maria Montessori’s discovery of what she referred to as “the child’s true normal nature” in 1907, which happened in the process of her experimental observation of young children given freedom in an environment prepared with materials designed for their self-directed learning activity. The method itself aims to duplicate this experimental observation of children to bring about, sustain and support their true natural way of being.

Waldorf

Waldorf education (also known as Steiner or Steiner-Waldorf education) is a humanistic approach to pedagogy based upon the educational philosophy of the Austrian philosopher Rudolf Steiner, the founder of anthroposophy. Learning is interdisciplinary, integrating practical, artistic, and conceptual elements. The approach emphasizes the role of the imagination in learning, developing thinking that includes a creative as well as an analytic component. The educational philosophy’s overarching goals are to provide young people the basis on which to develop into free, morally responsible and integrated individuals, and to help every child fulfill his or her unique destiny, the existence of which anthroposophy posits. Schools and teachers are given considerable freedom to define curricula within collegial structures.

Rudolf Steiner

Date: 1861–1925

Steiner founded a holistic educational impulse on the basis of his spiritual philosophy (anthroposophy). Now known as Steiner or Waldorf education, his pedagogy emphasizes a balanced de-

velopment of cognitive, affective/artistic, and practical skills (head, heart, and hands). Schools are normally self-administered by faculty; emphasis is placed upon giving individual teachers the freedom to develop creative methods.

Steiner's theory of child development divides education into three discrete developmental stages predating but with close similarities to the stages of development described by Piaget. Early childhood education occurs through imitation; teachers provide practical activities and a healthy environment. Steiner believed that young children should meet only goodness. Elementary education is strongly arts-based, centered on the teacher's creative authority; the elementary school-age child should meet beauty. Secondary education seeks to develop the judgment, intellect, and practical idealism; the adolescent should meet truth.

Democratic Education

Democratic education is a theory of learning and school governance in which students and staff participate freely and equally in a school democracy. In a democratic school, there is typically shared decision-making among students and staff on matters concerning living, working, and learning together.

A. S. Neill

Date: 1883–1973

Neill founded Summerhill School, the oldest existing democratic school in Suffolk, England in 1921. He wrote a number of books that now define much of contemporary democratic education philosophy. Neill believed that the happiness of the child should be the paramount consideration in decisions about the child's upbringing, and that this happiness grew from a sense of personal freedom. He felt that deprivation of this sense of freedom during childhood, and the consequent unhappiness experienced by the repressed child, was responsible for many of the psychological disorders of adulthood.

Classical Education

The Classical education movement advocates a form of education based in the traditions of Western culture, with a particular focus on education as understood and taught in the Middle Ages. The term "classical education" has been used in English for several centuries, with each era modifying the definition and adding its own selection of topics. By the end of the 18th century, in addition to the trivium and quadrivium of the Middle Ages, the definition of a classical education embraced study of literature, poetry, drama, philosophy, history, art, and languages. In the 20th and 21st centuries it is used to refer to a broad-based study of the liberal arts and sciences, as opposed to a practical or pre-professional program. Classical Education can be described as rigorous and systematic, separating children and their learning into three rigid categories, Grammar, Dialectic, and Rhetoric.

Charlotte Mason

Date: 1842–1923

Mason was a British educator who invested her life in improving the quality of children's educa-

tion. Her ideas led to a method used by some homeschoolers. Mason's philosophy of education is probably best summarized by the principles given at the beginning of each of her books. Two key mottos taken from those principles are "Education is an atmosphere, a discipline, a life" and "Education is the science of relations." She believed that children were born persons and should be respected as such; they should also be taught the Way of the Will and the Way of Reason. Her motto for students was "I am, I can, I ought, I will." Charlotte Mason believed that children should be introduced to subjects through living books, not through the use of "compendiums, abstracts, or selections." She used abridged books only when the content was deemed inappropriate for children. She preferred that parents or teachers read aloud those texts (such as Plutarch and the Old Testament), making omissions only where necessary.

Unschooling

Unschooling is a range of educational philosophies and practices centered on allowing children to learn through their natural life experiences, including child directed play, game play, household responsibilities, work experience, and social interaction, rather than through a more traditional school curriculum. Unschooling encourages exploration of activities led by the children themselves, facilitated by the adults. Unschooling differs from conventional schooling principally in the thesis that standard curricula and conventional grading methods, as well as other features of traditional schooling, are counterproductive to the goal of maximizing the education of each child.

John Holt

In 1964 Holt published his first book, *How Children Fail*, asserting that the academic failure of schoolchildren was not *despite* the efforts of the schools, but actually *because* of the schools. Not surprisingly, *How Children Fail* ignited a firestorm of controversy. Holt was catapulted into the American national consciousness to the extent that he made appearances on major TV talk shows, wrote book reviews for *Life* magazine, and was a guest on the *To Tell The Truth* TV game show. In his follow-up work, *How Children Learn*, published in 1967, Holt tried to elucidate the learning process of children and why he believed school short circuits that process.

Contemplative Education

Contemplative education focuses on bringing spiritual awareness into the pedagogical process. Contemplative approaches may be used in the classroom, especially in tertiary or (often in modified form) in secondary education. Parker Palmer is a recent pioneer in contemplative methods. The Center for Contemplative Mind in Society founded a branch focusing on education, The Association for Contemplative Mind in Higher Education.

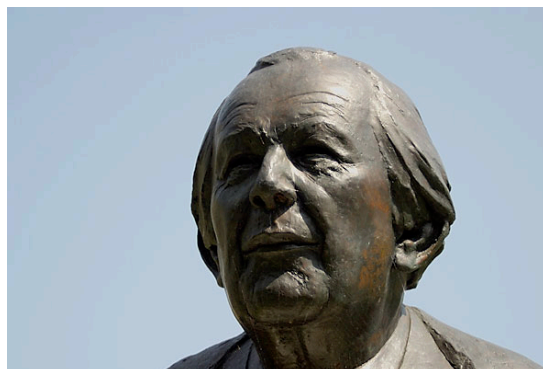
Contemplative methods may also be used by teachers in their preparation; Waldorf education was one of the pioneers of the latter approach. In this case, inspiration for enriching the content, format, or teaching methods may be sought through various practices, such as consciously reviewing the previous day's activities; actively holding the students in consciousness; and contemplating inspiring pedagogical texts. Zigler suggested that only through focusing on their own spiritual development could teachers positively impact the spiritual development of students.

Professional Organizations and Associations

Organisation	Nationality	Comment
International Network of Philosophers of Education	Worldwide	INPE is dedicated to fostering dialogue amongst philosophers of education around the world. It sponsors an international conference every other year.
Philosophy of Education Society	USA	PES is the national society for philosophy of education in the United States of America. This site provides information about PES, its services, history, and publications, and links to online resources relevant to the philosophy of education.
Philosophy of Education Society of Great Britain	UK	PESGB promotes the study, teaching and application of philosophy of education. It has an international membership. The site provides: a guide to the Society's activities and details about the Journal of Philosophy of Education and IMPACT.
Philosophy of Education Society of Australasia	Australasia	PESA promotes research and teaching in philosophy of education. It has a broad membership across not just Australia and New Zealand but also Asia, Europe and North America. PESA adopts an inclusive approach to philosophical work in education, and welcome contributions to the life of the Society from a variety of different theoretical traditions and perspectives.
Canadian Philosophy of Education Society	Canada	CPES is devoted to philosophical inquiry into educational issues and their relevance for developing educative, caring, and just teachers, schools, and communities. The society welcomes inquiries about membership from professionals and graduate students who share these interests.
The Nordic Society for Philosophy of Education	The Nordic countries: Denmark, Finland, Iceland, Norway, and Sweden	The Nordic Society for Philosophy of Education is a society consisting of Nordic philosophers of education with the purpose of fostering dialogue among philosophers of education within and beyond the Nordic countries, and to coordinate, facilitate and support exchange of ideas, information and experiences.
Society for the Philosophical Study of Education	USA	This Society is a professional association of philosophers of education which holds annual meetings in the Midwest region of the United States of America and sponsors a discussion forum and a Graduate Student Competition. Affiliate of the American Philosophical Association.
Ohio Valley Philosophy of Education Society	USA, Ohio Valley	OVPEs is a professional association of philosophers of education. We host an annual conference in the Ohio Valley region of the United States of America and sponsor a refereed journal: Philosophical Studies in Education.

John Dewey Society	USA	The John Dewey Society exists to keep alive John Dewey's commitment to the use of critical and reflective intelligence in the search for solutions to crucial problems in education and culture.
StudyPlace for Philosophy of Education	USA, Columbia University	This study place exists for persons who wish to engage in philosophy and education because both have value for them, quite apart from their professional responsibilities. We think networked digital information resources will enable people to reverse this ever-narrowing professionalism. This site is maintained at the Institute for Learning Technologies, Teachers College, Columbia University.
Center for Dewey Studies	USA, Southern Illinois University	The Center for Dewey Studies at Southern Illinois University at Carbondale was established in 1961 as the "Dewey Project." By virtue of its publications and research, the Center has become the international focal point for research on John Dewey's life and work.
International Society for Philosophy of Music Education	Unknown	the International Society for the Philosophy of Music Education (ISPME) is founded on both educational and professional objectives: "devoted to the specific interests of philosophy of music education in elementary through secondary schools, colleges and universities, in private studios, places of worship, and all the other places and ways in which music is taught and learned."
The Spencer Foundation	USA	The Spencer Foundation provides funding for investigations that promise to yield new knowledge about education in the United States or abroad. The Foundation funds research grants that range in size from smaller grants that can be completed within a year, to larger, multi-year endeavours.
Humanities Research Network	New Zealand	The Humanities Research Network is designed to encourage new ways of thinking about the overlapping domains of knowledge which are represented by the arts, humanities, social sciences, other related fields like law, and matauranga Māori, and new relationships among their practitioners.

Constructivism (Philosophy of Education)



Jean Piaget, founder of constructivism

Constructivism is a philosophical viewpoint about the nature of knowledge. Specifically, it represents an epistemological stance. There are many “flavors” of constructivism, but one prominent theorist known for his constructivist views is Jean Piaget, who focused on how humans make meaning in relation to the interaction between their experiences and their ideas. He considered himself to be a genetic epistemologist, which means he considered this interaction in relation to how humans are set up by their genetic make up to develop intellectually. His views tended to focus on human development in relation to what is occurring with an individual as opposed to development that is influenced by other humans. Views that are more focused on human development in the context of the social world are also of many flavors and include the sociocultural or socio-historical perspective of Lev Vygotsky and the situated cognition perspectives of Jean Lave and Etienne Wenger; Brown, Collins and Duguid; Newman, Griffin and Cole, and Barbara Rogoff. The concept of constructivism has influenced a number of disciplines, including psychology, sociology, education and the history of science. During its infancy, constructivism examined the interaction between human experiences and their reflexes or behavior-patterns. Jean Piaget called these systems of knowledge *schemes*. These are not to be confused with “schema,” a term that comes from schema theory, which is from information-processing perspectives on human cognition. Whereas Piaget’s schemes are content-free, schemata (the plural of schema) are concepts; for example, most humans have a schema for “grandmother” or “egg” or “magnet.” Constructivism does not refer to a specific pedagogy, although it is often confused with constructionism, an educational theory developed by Seymour Papert, inspired by constructivist and experiential learning ideas of Piaget. Piaget’s theory of constructivist learning has had wide ranging impact on learning theories and teaching methods in education and is an underlying theme of many education reform movements. Research support for constructivist teaching techniques has been mixed, with some research supporting these techniques and other research contradicting those results.

History

Earlier educational philosophies did not place much value on what would become constructivist ideas; children’s play and exploration was seen as aimless and of little importance. Jean Piaget did not agree with these traditional views; however, he saw play as an important and necessary part of the student’s cognitive development and provided scientific evidence for his views. Today, constructivist theories are influential throughout the formal and informal learning sectors. In museum education, constructivist theories inform exhibit design. One good example of constructivist learning in a non-formal setting is the Investigate Centre at The Natural History Museum, London. Here visitors are encouraged to explore a collection of real natural history specimens, to practice some scientific skills and make discoveries for themselves. Writers who influenced constructivism include:

- John Dewey (1859–1952)
- Maria Montessori (1870–1952)
- Władysław Strzemiński (1893–1952)
- Jean Piaget (1896–1980)
- Lev Vygotsky (1896–1934)
- Heinz von Foerster (1911–2002)

- George Kelly (1905–1967)
- Jerome Bruner (1915–2016)
- Herbert Simon (1916–2001)
- Paul Watzlawick (1921–2007)
- Ernst von Glasersfeld (1917–2010)
- Edgar Morin (1921–)
- Humberto Maturana (1928–)

Individual

The formalization of constructivism from a within-the-human perspective is generally attributed to Jean Piaget, who articulated mechanisms by which information from the environment and ideas from the individual interact and result in internalized structures developed by learners. He identified processes of accommodation and assimilation that are key in this interaction as individuals construct new knowledge from their experiences.

When individuals *assimilate* new information, they incorporate it into an already existing framework without changing that framework. This may occur when individuals' experiences are aligned with their internal representations of the world, but may also occur as a failure to change a faulty understanding; for example, they may not notice events, may misunderstand input from others, or may decide that an event is a fluke and is therefore unimportant as information about the world. In contrast, when individuals' experiences contradict their internal representations, they may change their perceptions of the experiences to fit their internal representations.

According to the theory, *accommodation* is the process of reframing one's mental representation of the external world to fit new experiences. Accommodation can be understood as the mechanism by which failure leads to learning: when we act on the expectation that the world operates in one way and it violates our expectations, we often fail, but by accommodating this new experience and reframing our model of the way the world works, we learn from the experience of failure, or others' failure.

It is important to note that constructivism is not a particular pedagogy. In fact, constructivism is a theory describing how learning happens, regardless of whether learners are using their experiences to understand a lecture or following the instructions for building a model airplane. In both cases, the theory of constructivism suggests that learners construct knowledge out of their experiences.

However, constructivism is often associated with pedagogic approaches that promote active learning, or learning by doing. There are many critics of "learning by doing" (a.k.a. "discovery learning") as an instructional strategy. While there is much enthusiasm for constructivism as a design strategy, according to Tobias and Duffy "... to us it would appear that constructivism

remains more of a philosophical framework than a theory that either allows us to precisely describe instruction or prescribe design strategies.(p.4)”.

Constructivist Learning Intervention

The Nature of the Learner

Social constructivism not only acknowledges the uniqueness and complexity of the learner, but actually encourages, utilizes and rewards it as an integral part of the learning process (Wertsch 1997).

The importance of the background and culture of the learner

Social constructivism or socioculturalism encourages the learner to arrive at his or her version of the truth, influenced by his or her background, culture or embedded worldview. Historical developments and symbol systems, such as language, logic, and mathematical systems, are inherited by the learner as a member of a particular culture and these are learned throughout the learner's life. This also stresses the importance of the nature of the learner's social interaction with knowledgeable members of the society. Without the social interaction with other more knowledgeable people, it is impossible to acquire social meaning of important symbol systems and learn how to utilize them. Young children develop their thinking abilities by interacting with other children, adults and the physical world. From the social constructivist viewpoint, it is thus important to take into account the background and culture of the learner throughout the learning process, as this background also helps to shape the knowledge and truth that the learner creates, discovers and attains in the learning process (Wertsch 1997).

Responsibility for learning

Furthermore, it is argued that the responsibility of learning should reside increasingly with the learner (Glaserfeld, 1989). Social constructivism thus emphasizes the importance of the learner being actively involved in the learning process, unlike previous educational viewpoints where the responsibility rested with the instructor to teach and where the learner played a passive, receptive role. Von Glaserfeld (1989) emphasized that learners construct their own understanding and that they do not simply mirror and reflect what they read. Learners look for meaning and will try to find regularity and order in the events of the world even in the absence of full or complete information.

The Harkness discussion method

It is called the “Harkness” discussion method because it was developed at Phillips Exeter Academy with funds donated in the 1930s by Edward Harkness. This is also named after the Harkness table and involves students seated in a circle, motivating and controlling their own discussion. The teacher acts as little as possible. Perhaps the teacher's only function is to observe, although he/she might begin or shift or even direct a discussion. The students get it rolling, direct it, and focus it. They act as a team, cooperatively, to make it work. They all participate, but not in a competitive way. Rather, they all share in the responsibility and the goals, much as any members share in any team sport. Although the goals of any discussion will change depending upon what's under discussion, some goals will always be the same: to illuminate the subject, to unravel its mysteries, to interpret and share and learn from other points of view, to piece together the puzzle using everyone's contribution. Discussion skills are important. Everyone must be aware of how to get this discussion rolling and keep it

rolling and interesting. Just as in any sport, a number of skills are necessary to work on and use at appropriate times. Everyone is expected to contribute by using these skills.

The motivation for learning

Another crucial assumption regarding the nature of the learner concerns the level and source of motivation for learning. According to Von Glasersfeld (1989) sustaining motivation to learn is strongly dependent on the learner's confidence in his or her potential for learning. These feelings of competence and belief in potential to solve new problems, are derived from first-hand experience of mastery of problems in the past and are much more powerful than any external acknowledgment and motivation (Prawat and Floden 1994). This links up with Vygotsky's "zone of proximal development" (Vygotsky 1978) where learners are challenged within close proximity to, yet slightly above, their current level of development. By experiencing the successful completion of challenging tasks, learners gain confidence and motivation to embark on more complex challenges.

The Role of the Instructor

Instructors as facilitators

According to the social constructivist approach, instructors have to adapt to the role of facilitators and not teachers (Bauersfeld, 1995). Whereas a teacher gives a didactic lecture that covers the subject matter, a facilitator helps the learner to get to his or her own understanding of the content. In the former scenario the learner plays a passive role and in the latter scenario the learner plays an active role in the learning process. The emphasis thus turns away from the instructor and the content, and towards the learner (Gamoran, Secada, & Marrett, 1998). This dramatic change of role implies that a facilitator needs to display a totally different set of skills than that of a teacher (Brownstein 2001). A teacher tells, a facilitator asks; a teacher lectures from the front, a facilitator supports from the back; a teacher gives answers according to a set curriculum, a facilitator provides guidelines and creates the environment for the learner to arrive at his or her own conclusions; a teacher mostly gives a monologue, a facilitator is in continuous dialogue with the learners (Rhodes and Bellamy, 1999). A facilitator should also be able to adapt the learning experience 'in mid-air' by taking the initiative to steer the learning experience to where the learners want to create value.

The learning environment should also be designed to support and challenge the learner's thinking (Di Vesta, 1987). While it is advocated to give the learner ownership of the problem and solution process, it is not the case that any activity or any solution is adequate. The critical goal is to support the learner in becoming an effective thinker. This can be achieved by assuming multiple roles, such as consultant and coach.

A few strategies for cooperative learning include

- Reciprocal Questioning: students work together to ask and answer questions
- Jigsaw Classroom: students become "experts" on one part of a group project and teach it to the others in their group
- Structured Controversies: Students work together to research a particular controversy (Woolfolk 2010)

Constructivism

Learning is an active process

Social constructivism, strongly influenced by Vygotsky's (1978) work, suggests that knowledge is first constructed in a social context and is then appropriated by individuals (Bruning et al., 1999; M. Cole, 1991; Eggen & Kauchak, 2004). According to social constructivists, the process of sharing individual perspectives-called *collaborative elaboration* (Meter & Stevens, 2000)-results in learners constructing understanding together that wouldn't be possible alone (Greeno et al., 1996).

Social constructivist scholars view learning as an active process where learners should learn to discover principles, concepts and facts for themselves, hence the importance of encouraging guesswork and intuitive thinking in learners (Brown et al.1989; Ackerman 1996). In fact, for the social constructivist, reality is not something that we can discover because it does not pre-exist prior to our social invention of it. Kukla (2000) argues that reality is constructed by our own activities and that people, together as members of a society, invent the properties of the world.

Other constructivist scholars agree with this and emphasize that individuals make meanings through the interactions with each other and with the environment they live in. Knowledge is thus a product of humans and is socially and culturally constructed (Ernest 1991; Prawat and Floden 1994). McMahon (1997) agrees that learning is a social process. He further states that learning is not a process that only takes place inside our minds, nor is it a passive development of our behaviors that is shaped by external forces and that meaningful learning occurs when individuals are engaged in social activities.

Vygotsky (1978) also highlighted the convergence of the social and practical elements in learning by saying that the most significant moment in the course of intellectual development occurs when speech and practical activity, two previously completely independent lines of development, converge. Through practical activity a child constructs meaning on an intra-personal level, while speech connects this meaning with the interpersonal world shared by the child and her/his culture.

good relationship between instructor and learner

A further characteristic of the role of the facilitator in the social constructivist viewpoint, is that the instructor and the learners are equally involved in learning from each other as well (Holt and Willard-Holt 2000). This means that the learning experience is both subjective and objective and requires that the instructor's culture, values and background become an essential part of the interplay between learners and tasks in the shaping of meaning. Learners compare their version of the truth with that of the instructor and fellow learners to get to a new, socially tested version of truth (Kukla 2000). The task or problem is thus the interface between the instructor and the learner (McMahon 1997). This creates a dynamic interaction between task, instructor and learner. This entails that learners and instructors should develop an awareness of each other's viewpoints and then look to their own beliefs, standards and values, thus being both subjective and objective at the same time (Savery 1994).

Some studies argue for the importance of mentoring in the process of learning (Archee and Duin 1995; Brown et al. 1989). The social constructivist model thus emphasizes the importance of the relationship between the student and the instructor in the learning process.

Some learning approaches that could harbour this interactive learning include reciprocal teaching, peer collaboration, cognitive apprenticeship, problem-based instruction, web quests, anchored instruction and other approaches that involve learning with others.

Collaboration Among Learners

Learners with different skills and backgrounds should collaborate in tasks and discussions to arrive at a shared understanding of the truth in a specific field (Duffy and Jonassen 1992).

Most social constructivist models, such as that proposed by Duffy and Jonassen (1992), also stress the need for collaboration among learners, in direct contradiction to traditional competitive approaches. One Vygotskian notion that has significant implications for peer collaboration, is that of the zone of proximal development. Defined as the distance between the actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers, it differs from the fixed biological nature of Piaget's stages of development. Through a process of 'scaffolding' a learner can be extended beyond the limitations of physical maturation to the extent that the development process lags behind the learning process (Vygotsky 1978).

Learning by teaching (LdL) as constructivist method

If students have to present and train new contents with their classmates, a non-linear process of collective knowledge-construction will be set up.

The importance of context

The social constructivist paradigm views the context in which the learning occurs as central to the learning itself (McMahon 1997).

Underlying the notion of the learner as an active processor is "the assumption that there is no one set of generalised learning laws with each law applying to all domains" (Di Vesta 1987:208). Decontextualised knowledge does not give us the skills to apply our understandings to authentic tasks because, as Duffy and Jonassen (1992) indicated, we are not working with the concept in the complex environment and experiencing the complex interrelationships in that environment that determine how and when the concept is used. One social constructivist notion is that of authentic or situated learning, where the student takes part in activities directly relevant to the application of learning and that take place within a culture similar to the applied setting (Brown et al. 1989). Cognitive apprenticeship has been proposed as an effective constructivist model of learning that attempts to "enculturate students into authentic practices through activity and social interaction in a way similar to that evident, and evidently successful, in craft apprenticeship" (Ackerman 1996:25).

Holt and Willard-Holt (2000) emphasize the concept of dynamic assessment, which is a way of assessing the true potential of learners that differs significantly from conventional tests. Here the essentially interactive nature of learning is extended to the process of assessment. Rather than viewing assessment as a process carried out by one person, such as an instructor, it is seen as a two-way process involving interaction between both instructor and learner. The role of the assessor becomes one of entering into dialogue with the persons being assessed to find out their current level of performance on any task and sharing with them possible ways in which that performance

might be improved on a subsequent occasion. Thus, assessment and learning are seen as inextricably linked and not separate processes (Holt and Willard-Holt 2000).

According to this viewpoint instructors should see assessment as a continuous and interactive process that measures the achievement of the learner, the quality of the learning experience and courseware. The feedback created by the assessment process serves as a direct foundation for further development.

The Selection, Scope, and Sequencing of the Subject Matter

Knowledge should be discovered as an integrated whole

Knowledge should not be divided into different subjects or compartments, but should be discovered as an integrated whole (McMahon 1997; Di Vesta 1987).

This also again underlines the importance of the context in which learning is presented (Brown et al. 1989). The world, in which the learner needs to operate, does not approach one in the form of different subjects, but as a complex myriad of facts, problems, dimensions, and perceptions (Ackerman 1996).

Engaging and challenging the learner

Learners should constantly be challenged with tasks that refer to skills and knowledge just beyond their current level of mastery. This captures their motivation and builds on previous successes to enhance learner confidence (Brownstein 2001). This is in line with Vygotsky's zone of proximal development, which can be described as the distance between the actual developmental level (as determined by independent problem-solving) and the level of potential development (as determined through problem-solving under adult guidance or in collaboration with more capable peers) (Vygotsky 1978).

Vygotsky (1978) further claimed that instruction is good only when it proceeds ahead of development. Then it awakens and rouses to life an entire set of functions in the stage of maturing, which lie in the zone of proximal development. It is in this way that instruction plays an extremely important role in development.

To fully engage and challenge the learner, the task and learning environment should reflect the complexity of the environment that the learner should be able to function in at the end of learning. Learners must not only have ownership of the learning or problem-solving process, but of the problem itself (Derry 1999).

Where the sequencing of subject matter is concerned, it is the constructivist viewpoint that the foundations of any subject may be taught to anybody at any stage in some form (Duffy and Jonassen 1992). This means that instructors should first introduce the basic ideas that give life and form to any topic or subject area, and then revisit and build upon these repeatedly. This notion has been extensively used in curricula.

It is important for instructors to realize that although a curriculum may be set down for them, it inevitably becomes shaped by them into something personal that reflects their own belief systems, their thoughts and feelings about both the content of their instruction and their learners (Rhodes

and Bellamy 1999). Thus, the learning experience becomes a shared enterprise. The emotions and life contexts of those involved in the learning process must therefore be considered as an integral part of learning. The goal of the learner is central in considering what is learned (Brown et al. 1989; Ackerman 1996).

The structuredness of the learning process

It is important to achieve the right balance between the degree of structure and flexibility that is built into the learning process. Savery (1994) contends that the more structured the learning environment, the harder it is for the learners to construct meaning based on their conceptual understandings. A facilitator should structure the learning experience just enough to make sure that the students get clear guidance and parameters within which to achieve the learning objectives, yet the learning experience should be open and free enough to allow for the learners to discover, enjoy, interact and arrive at their own, socially verified version of truth.

In Adult Learning

Constructivist ideas have been used to inform adult education. Whereas *pedagogy* usually applies to the education of children, educators of adults often speak instead of *andragogy*. Methods must take account of differences in learning, due to the fact that adults have many more experiences and previously existing neurological structures.

Approaches based on constructivism stress the importance of mechanisms for mutual planning, diagnosis of learner needs and interests, cooperative learning climate, sequential activities for achieving the objectives, formulation of learning objectives based on the diagnosed needs and interests.

Personal relevance of the content, involvement of the learner in the process, and deeper understanding of underlying concepts are some of the intersections between emphases in constructivism and adult learning principles.

Pedagogies Based on Constructivism

Various approaches in pedagogy derive from constructivist theory. They usually suggest that learning is accomplished best using a hands-on approach. Learners learn by experimentation, and not by being told what will happen, and are left to make their own inferences, discoveries and conclusions.

Supportive Research and Evidence

Hmelo-Silver, Duncan, & Chinn cite several studies supporting the success of the constructivist problem-based and inquiry learning methods. For example, they describe a project called GenScope, an inquiry-based science software application. Students using the GenScope software showed significant gains over the control groups, with the largest gains shown in students from basic courses.

Hmelo-Silver et al. also cite a large study by Geier on the effectiveness of inquiry-based science for middle school students, as demonstrated by their performance on high-stakes standardized

tests. The improvement was 14% for the first cohort of students and 13% for the second cohort. This study also found that inquiry-based teaching methods greatly reduced the achievement gap for African-American students.

Guthrie et al. (2004) compared three instructional methods for third-grade reading: a traditional approach, a strategies instruction only approach, and an approach with strategies instruction and constructivist motivation techniques including student choices, collaboration, and hands-on activities. The constructivist approach, called CORI (Concept-Oriented Reading Instruction), resulted in better student reading comprehension, cognitive strategies, and motivation.

Jong Suk Kim found that using constructivist teaching methods for 6th graders resulted in better student achievement than traditional teaching methods. This study also found that students preferred constructivist methods over traditional ones. However, Kim did not find any difference in student self-concept or learning strategies between those taught by constructivist or traditional methods.

Doğru and Kalender compared science classrooms using traditional teacher-centered approaches to those using student-centered, constructivist methods. In their initial test of student performance immediately following the lessons, they found no significant difference between traditional and constructivist methods. However, in the follow-up assessment 15 days later, students who learned through constructivist methods showed better retention of knowledge than those who learned through traditional methods.

Criticism

Several cognitive psychologists and educators have questioned the central claims of constructivism. It is argued that constructivist theories are misleading or contradict known findings. Matthews (1993) attempts to sketch the influence of constructivism in current mathematics and science education, aiming to indicate how pervasive Aristotle's empiricist epistemology is within it and what problems constructivism faces on that account.

In the neo-Piagetian theories of cognitive development it is maintained that learning at any age depends upon the processing and representational resources available at this particular age. That is, it is maintained that if the requirements of the concept to be understood exceeds the available processing efficiency and working memory resources then the concept is by definition not learnable. This attitude toward learning impedes the learning from understanding essential theoretical concepts or, in other words, reasoning. Therefore, no matter how active a child is during learning, to learn the child must operate in a learning environment that meets the developmental and individual learning constraints that are characteristic for the child's age and this child's possible deviations from her age's norm. If this condition is not met, construction goes astray.

Several educators have also questioned the effectiveness of this approach toward instructional design, especially as it applies to the development of instruction for novices. (Mayer, 2004; Kirschner, Sweller, and Clark, 2006) While some constructivists argue that "learning by doing" enhances learning, critics of this instructional strategy argue that little empirical evidence exists to support this statement given novice learners (Mayer, 2004; Kirschner, Sweller, and Clark, 2006). Sweller

and his colleagues argue that novices do not possess the underlying mental models, or “schemas” necessary for “learning by doing” (e.g. Sweller, 1988). Indeed, Mayer (2004) reviewed the literature and found that fifty years of empirical data do not support using the constructivist teaching technique of pure discovery; in those situations requiring discovery, he argues for the use of guided discovery instead.

Mayer (2004) argues that not all teaching techniques based on constructivism are efficient or effective for all learners, suggesting many educators misapply constructivism to use teaching techniques that require learners to be behaviorally active. He describes this inappropriate use of constructivism as the “constructivist teaching fallacy”. “I refer to this interpretation as the constructivist teaching fallacy because it equates active learning with active teaching.” (Mayer, 2004, p. 15). Instead Mayer proposes learners should be “cognitively active” during learning and that instructors use “guided practice.”

In contrast, Kirschner *et al.* (2006) describe constructivist teaching methods as “unguided methods of instruction.” They suggest more structured learning activities for learners with little to no prior knowledge. Slezak states that constructivism “is an example of fashionable but thoroughly problematic doctrines that can have little benefit for practical pedagogy or teacher education.” Constructivist Foundations 6(1): 102–111 and similar views have been stated by Meyer, Boden, Quale and others.

Kirschner *et al.* group a number of learning theories together (Discovery, Problem-Based, Experiential, and Inquiry-Based learning) and stated that highly scaffolded constructivist methods like problem-based learning and inquiry learning are ineffective. Kirschner *et al.* described several research studies that were favorable to problem-based learning given learners were provided some level of guidance and support.

A Rebuttal to the Criticisms of Kirschner, Sweller, and Clark

While there are critics of the Kirschner, Sweller, and Clark article, Sweller and his associates have written in their articles about:

1. instructional designs for producing procedural learning (learning as behavior change) (Sweller, 1988);
2. their grouping of seemingly disparate learning theories (Kirschner *et al.*, 2006) and;
3. a continuum of guidance beginning with worked examples that may be followed by practice, or transitioned to practice (Kalyuga, Ayres, Chandler, and Sweller, 2003; Renkl, Atkinson, Maier, and Staley, 2002)

Kirschner *et al.* (2006) describe worked examples as an instructional design solution for procedural learning. Clark, Nguyen, and Sweller (2006) describe this as a very effective, empirically validated method of teaching learners procedural skill acquisition. Evidence for learning by studying worked-examples, is known as the worked-example effect and has been found to be useful in many domains [e.g. music, chess, athletics (Atkinson, Derry, Renkl, & Wortham, 2000); concept mapping (Hilbert & Renkl, 2007); geometry (Tarmizi and Sweller, 1988); physics, mathematics, or programming (Gerjets, Scheiter, and Catrambone, 2004).

Kirschner *et al.* (2006) describe why they group a series of seemingly disparate learning theories (Discovery, Problem-Based, Experiential, and Inquiry-Based learning). The reasoning for this grouping is because each learning theory promotes the same constructivist teaching technique—"learning by doing." While they argue "learning by doing" is useful for more knowledgeable learners, they argue this teaching technique is not useful for novices. Mayer states that it promotes behavioral activity too early in the learning process, when learners should be cognitively active (Mayer, 2004).

In addition, Sweller and his associates describe a continuum of guidance, starting with worked examples to slowly fade guidance. This continuum of faded guidance has been tested empirically to produce a series of learning effects: the worked-example effect (Sweller and Cooper, 1985), the guidance fading effect (Renkl, Atkinson, Maier, and Staley, 2002), and the expertise-reversal effect (Kalyuga, Ayres, Chandler, and Sweller, 2003).

Criticism of Discovery-based Teaching Techniques

After a half century of advocacy associated with instruction using minimal guidance, there appears no body of research supporting the technique. In so far as there is any evidence from controlled studies, it almost uniformly supports direct, strong instructional guidance rather constructivist-based minimal guidance during the instruction of novice to intermediate learners. Even for students with considerable prior knowledge, strong guidance while learning is most often found to be equally effective as unguided approaches. Not only is unguided instruction normally less effective; there is also evidence that it may have negative results when student acquire misconceptions or incomplete or disorganized knowledge

— *Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching by Kirschner, Sweller, Clark*

Mayer (2004) argues against discovery-based teaching techniques and provides an extensive review to support this argument. Mayer's arguments are against pure discovery, and are not specifically aimed at constructivism: "Nothing in this article should be construed as arguing against the view of learning as knowledge construction or against using hands-on inquiry or group discussion that promotes the process of knowledge construction in learners. The main conclusion I draw from the three research literatures I have reviewed is that it would be a mistake to interpret the current constructivist view of learning as a rationale for reviving pure discovery as a method of instruction."

Mayer's concern is how one applies discovery-based teaching techniques. He provides empirical research as evidence that discovery-based teaching techniques are inadequate. Here he cites this literature and makes his point "For example, a recent replication is research showing that students learn to become better at solving mathematics problems when they study worked-out examples rather than when they solely engage in hands-on problem solving (Sweller, 1999). Today's proponents of discovery methods, who claim to draw their support from constructivist philosophy, are making inroads into educational practice. Yet a dispassionate review of the relevant research literature shows that discovery-based practice is not as effective as guided discovery." (Mayer, 2004, p. 18)

Mayer's point is that people often misuse constructivism to promote pure discovery-based teach-

ing techniques. He proposes that the instructional design recommendations of constructivism are too often aimed at discovery-based practice (Mayer, 2004). Sweller (1988) found evidence that practice by novices during early schema acquisition, distracts these learners with unnecessary search-based activity, when the learner's attention should be focused on understanding (acquiring schemas).

The study by Kirschner et al. from which the quote at the beginning of this section was taken has been widely cited and is important for showing the limits of minimally-guided instruction. Hmelo-Silver et al. responded, pointing out that Kirschner et al. conflated constructivist teaching techniques such as inquiry learning with "discovery learning". This would agree with Mayer's viewpoint that even though constructivism as a theory and teaching techniques incorporating guidance are likely valid applications of this theory, nevertheless a tradition of misunderstanding has led to some question "pure discovery" techniques.

The Math Wars and Discovery-based Teaching Techniques

The math wars controversy in the United States is an example of the type of heated debate that sometimes follows the implementation of constructivist-inspired curricula in schools. In the 1990s, mathematics textbooks based on new standards largely informed by constructivism were developed and promoted with government support. Although constructivist theory does not require eliminating instruction entirely, some textbooks seemed to recommend this extreme. Some parents and mathematicians protested the design of textbooks that omitted or de-emphasized instruction of standard mathematical methods. Supporters responded that the methods were to be eventually discovered under direction by the teacher, but since this was missing or unclear, many insisted the textbooks were designed to deliberately eliminate instruction of standard methods. In one commonly adopted text, the standard formula for the area of a circle is to be derived in the classroom, but not actually printed in the student textbook as is explained by the developers of CMP: "The student role of formulating, representing, clarifying, communicating, and reflecting on ideas leads to an increase in learning. If the format of the texts included many worked examples, the student role would then become merely reproducing these examples with small modifications."

Similarly, this approach has been applied to reading with whole language and inquiry-based science that emphasizes the importance of *devising* rather than just performing hands-on experiments as early as the elementary grades (traditionally done by research scientists), rather than studying facts. In other areas of curriculum such as social studies and writing are relying more on "higher order thinking skills" rather than memorization of dates, grammar or spelling rules or reciting correct answers. Advocates of this approach counter that the constructivism does not require going to extremes, that in fact teachable moments should regularly infuse the experience with the more traditional teaching. The primary differentiation from the traditional approach being that the engagement of the students in their learning makes them more receptive to learning things at an appropriate time, rather than on a preset schedule.

Importance of Structure in Constructivist Learning Environments

During the 1990s, several theorists began to study the cognitive load of novices (those with little or no prior knowledge of the subject matter) during problem solving. Cognitive load theory was applied in several contexts (Paas, 1992; Moreno & Mayer, 1999; Mousavi, Low, & Sweller, 1995;

Chandler and Sweller, 1992; Sweller & Cooper, 1985; Cooper & Sweller, 1987). Based on the results of their research, these authors do not support the idea of allowing novices to interact with ill-structured learning environments. Ill-structured learning environments rely on the learner to discover problem solutions (Jonassen, 1997). Jonassen (1997) also suggested that novices be taught with “well-structured” learning environments.

Jonassen (1997) also proposed well-designed, well-structured learning environments provide scaffolding for problem-solving. Finally both Sweller and Jonassen support problem-solving scenarios for more advanced learners (Jonassen, 1997; Luga, Ayres, Chandler, and Sweller, 2003).

Sweller and his associates even suggest well-structured learning environments, like those provided by worked examples, are not effective for those with more experience—this was later described as the “expertise reversal effect” (Kalyuga et al., 2003). Cognitive load theorists suggest worked examples initially, with a gradual introduction of problem solving scenarios; this is described as the “guidance fading effect” (Renkl, Atkinson, Maier, and Staley, 2002; Sweller, 2003). Each of these ideas provides more evidence for Anderson’s ACT-R framework (Clark & Elen, 2006). This ACT-R framework suggests learning can begin with studying examples.

Finally Mayer states: “Thus, the contribution of psychology is to help move educational reform efforts from the fuzzy and unproductive world of educational ideology—which sometimes hides under the banner of various versions of constructivism—to the sharp and productive world of theory-based research on how people learn.” (Mayer, 2004, p. 18).

Confusion Between Constructivist and Maturationist Views

Many people confuse constructivist with maturationist views. The constructivist (or cognitive-developmental) stream “is based on the idea that the dialectic or interactionist process of development and learning through the student’s active construction should be facilitated and promoted by adults” (DeVries et al., 2002). Whereas, “The romantic maturationist stream is based on the idea that the student’s naturally occurring development should be allowed to flower without adult interventions in a permissive environment” (DeVries et al., 2002). In other words, adults play an active role in guiding learning in constructivism, while they are expected to allow children to guide themselves in maturationism.

Social Constructivism

In recent decades, constructivist theorists have extended the traditional focus on individual learning to address collaborative and social dimensions of learning. It is possible to see *social constructivism* as a bringing together of aspects of the work of Piaget with that of Bruner and Vygotsky (Wood 1998: 39).

Communal Constructivism

The concept *Communal constructivism* was developed by Leask and Younie (2001a) in 1995 through their research on the European SchoolNet which demonstrated the value of experts collaborating to push the boundaries of knowledge i.e. communal construction of new knowledge between experts rather than social construction of knowledge as described by Vygotsky where there

is a learner to teacher scaffolding relationship. “Communal constructivism” as a concept applies to those situations in which there is currently no expert knowledge or indeed research to underpin knowledge in an area. “Communal constructivism” refers specifically to the process of experts working together to create, record and publish new knowledge in emerging areas. In the seminal European SchoolNet research where for the first time academics were testing out how the internet could support classroom practice and pedagogy, experts from a number of countries set up test situations to generate and understand new possibilities for educational practice.

Bryn Holmes in 2001 applied this to student learning as described in an early paper, “in this model, students will not simply pass through a course like water through a sieve but instead leave their own imprint in the learning process.”

Influence on Computer Science

Constructivism has influenced the course of programming and computer science. Some famous programming languages have been created, wholly or in part, for educational use, to support the constructionist theory of Seymour Papert. These languages have been dynamically typed, and reflective. Logo is the best known of them. Constructivism has also informed the design of interactive machine learning systems.

Sociology of Education

The sociology of education is the study of how public institutions and individual experiences affect education and its outcomes. It is mostly concerned with the public schooling systems of modern industrial societies, including the expansion of higher, further, adult, and continuing education.

Education has often been very much so seen as a fundamentally optimistic human endeavour characterised by aspirations for progress and betterment. It is understood by many to be a means of overcoming handicaps, achieving greater equality, and acquiring wealth and social status. Education is perceived as a place where children can develop according to their unique needs and potential. It is also perceived as one of the best means of achieving greater social equality. Many would say that the purpose of education should be to develop every individual to their full potential, and give them a chance to achieve as much in life as their natural abilities allow (meritocracy). Few would argue that any education system accomplishes this goal perfectly. Some take a particularly critical view, arguing that the education system is designed with the intention of causing the social reproduction of inequality.

Sociology of Education is the networking of public institution and individuals experiences in the society that affect education outcomes.

Foundations

Systematic sociology of education began with the work of Émile Durkheim (1858–1917) on moral education as a basis for organic solidarity, and with studies by Max Weber (1864–1920) on the Chinese literati as an instrument of political control. After World War II, however, the subject re-

ceived renewed interest around the world: from technological functionalism in the US, egalitarian reform of opportunity in Europe, and human-capital theory in economics. These all implied that, with industrialization, the need for a technologically skilled labour force undermines class distinctions and other ascriptive systems of stratification, and that education promotes social mobility. However, statistical and field research across numerous societies showed a persistent link between an individual's social class and achievement, and suggested that education could only achieve limited social mobility. Sociological studies showed how schooling patterns reflected, rather than challenged, class stratification and racial and sexual discrimination. After the general collapse of functionalism from the late 1960s onwards, the idea of education as an unmitigated good was even more profoundly challenged. Neo-Marxists argued that school education simply produced a docile labour force essential to late-capitalist class relations.

Theoretical Perspectives

The sociology of education contains a number of theories. Some of the main theories are presented below.

Political Arithmetic

The Political Arithmetic tradition within the sociology of education began with Hogben (1938) and denotes a tradition of politically critical quantitative research dealing with social inequalities, especially those generated by social stratification (Heath 2000). Important works in this tradition have been (Glass 1954), (Floud, et al. 1956) and (Halsey, et al. 1980). All of these works were concerned with the way in which school structures were implicated in social class inequalities in Britain. More recent work in this tradition has broadened its focus to include gender, ethnic differentials and international differences. While researchers in this tradition have engaged with sociological theories such as Rational Choice Theory and Cultural Reproduction Theory, the political arithmetic tradition has tended to remain rather sceptical of 'grand theory' and very much concerned with empirical evidence and social policy. The political arithmetic tradition was attacked by the 'New Sociology of Education' of the 1970s which rejected quantitative research methods. This heralded a period of methodological division within the sociology of education. However, the political arithmetic tradition, while rooted in quantitative methods, has increasingly engaged with mixed methods approaches.

Structural Functionalism

Structural functionalists believe that society leans towards social equilibrium and social order. They see society like a human body, in which institutions such as education are like important organs that keep the society/body healthy and well.

Socialization

Social health means the same as social order, and is guaranteed when nearly everyone accepts the general moral values of their society. Hence structural functionalists believe the aim of key institutions, such as education, is to socialize children and teenagers. Socialization is the process by which the new generation learns the knowledge, attitudes and values that they will need as productive citizens. Although this aim is stated in the formal curriculum, it is mainly achieved through

the hidden curriculum, a subtler, but nonetheless powerful, indoctrination of the norms and values of the wider society. Students learn these values because their behavior at school is regulated (Durkheim in) until they gradually internalize and accept them.

Filling Roles in Society

Education must also perform another function: As various jobs become vacant, they must be filled with the appropriate people. Therefore, the other purpose of education is to sort and rank individuals for placement in the labor market [Munro, 1997]. Those with high achievement will be trained for the most important jobs and in reward, be given the highest incomes. Those who achieve the least, will be given the least demanding (intellectually at any rate, if not physically) jobs, and hence the least income.

According to Sennet and Cobb however, “to believe that ability alone decides who is rewarded is to be deceived”. Meighan agrees, stating that large numbers of capable students from working-class backgrounds fail to achieve satisfactory standards in school and therefore fail to obtain the status they deserve. Jacob believes this is because the middle class cultural experiences that are provided at school may be contrary to the experiences working-class children receive at home. In other words, working class children are not adequately prepared to cope at school. They are therefore “cooled out” from school with the least qualifications, hence they get the least desirable jobs, and so remain working class. Sargent confirms this cycle, arguing that schooling supports continuity, which in turn supports social order. Talcott Parsons believed that this process, whereby some students were identified and labelled educational failures, “was a necessary activity which one part of the social system, education, performed for the whole”. Yet the structural functionalist perspective maintains that this social order, this continuity, is what most people desire.

Education and Social Reproduction

The perspective of conflict theory, contrary to the structural functionalist perspective, believes that society is full of vying social groups with different aspirations, different access to life chances and gain different social rewards. Relations in society, in this view, are mainly based on exploitation, oppression, domination and subordination. Many teachers assume that students will have particular middle class experiences at home, and for some children this assumption isn't necessarily true. Some children are expected to help their parents after school and carry considerable domestic responsibilities in their often single-parent home. The demands of this domestic labour often make it difficult for them to find time to do all their homework and thus affects their academic performance.

Where teachers have softened the formality of regular study and integrated student's preferred working methods into the curriculum, they noted that particular students displayed strengths they had not been aware of before. However few teachers deviate from the traditional curriculum, and the curriculum conveys what constitutes knowledge as determined by the state - and those in power [Young in]. This knowledge isn't very meaningful to many of the students, who see it as pointless. Wilson & Wyn state that the students realise there is little or no direct link between the subjects they are doing and their perceived future in the labour market. Anti-school values displayed by these children are often derived from their consciousness of their real interests. Sargent believes that for working-class students, striving to succeed and absorbing the school's middle

class values, is accepting their inferior social position as much as if they were determined to fail. Fitzgerald states that “irrespective of their academic ability or desire to learn, students from poor families have relatively little chance of securing success”. On the other hand, for middle and especially upper-class children, maintaining their superior position in society requires little effort. The federal government subsidises ‘independent’ private schools enabling the rich to obtain ‘good education’ by paying for it. With this ‘good education’, rich children perform better, achieve higher and obtain greater rewards. In this way, the continuation of privilege and wealth for the elite is made possible *in continuum*.

Conflict theorists believe this social reproduction continues to occur because the whole education system is overlain with ideology provided by the dominant group. In effect, they perpetuate the myth that education is available to all to provide a means of achieving wealth and status. Anyone who fails to achieve this goal, according to the myth, has only themselves to blame. Wright agrees, stating that “the effect of the myth is to...stop them from seeing that their personal troubles are part of major social issues”. The duplicity is so successful that many parents endure appalling jobs for many years, believing that this sacrifice will enable their children to have opportunities in life that they did not have themselves. These people who are poor and disadvantaged are victims of a societal confidence trick. They have been encouraged to believe that a major goal of schooling is to strengthen equality while, in reality, schools reflect society’s intention to maintain the previous unequal distribution of status and power [Fitzgerald, cited in].

This perspective has been criticised as deterministic and pessimistic, while there is some evidence for social mobility among disadvantaged students.

It should be recognised however that it is a model, an aspect of reality which is an important part of the picture.

Structure and Agency

Bourdieu and Cultural Capital

This theory of social reproduction has been significantly theorised by Pierre Bourdieu. However Bourdieu as a social theorist has always been concerned with the dichotomy between the objective and subjective, or to put it another way, between structure and agency. Bourdieu has therefore built his theoretical framework around the important concepts of habitus, field and cultural capital. These concepts are based on the idea that objective structures determine individuals’ chances, through the mechanism of the habitus, where individuals internalise these structures. However, the habitus is also formed by, for example, an individual’s position in various fields, their family and their everyday experiences. Therefore, one’s class position does not determine one’s life chances, although it does play an important part, alongside other factors.

Bourdieu used the idea of cultural capital to explore the differences in outcomes for students from different classes in the French educational system. He explored the tension between the conservative reproduction and the innovative production of knowledge and experience. He found that this tension is intensified by considerations of which particular cultural past and present is to be conserved and reproduced in schools. Bourdieu argues that it is the culture of the dominant groups, and therefore their cultural capital, which is embodied in schools, and that this leads to social reproduction.

The cultural capital of the dominant group, in the form of practices and relation to culture, is assumed by the school to be the natural and only proper type of cultural capital and is therefore legitimated. It demands “uniformly of all its students that they should have what it does not give” [Bourdieu]. This legitimate cultural capital allows students who possess it to gain educational capital in the form of qualifications. Those lower-class students are therefore disadvantaged. To gain qualifications they must acquire legitimate cultural capital, by exchanging their own (usually working-class) cultural capital. This exchange is not a straightforward one, due to the class ethos of the lower-class students. Class ethos is described as the particular dispositions towards, and subjective expectations of, school and culture. It is in part determined by the objective chances of that class. This means that not only do children find success harder in school due to the fact that they must learn a new way of ‘being’, or relating to the world, and especially, a new way of relating to and using language, but they must also act against their instincts and expectations. The subjective expectations influenced by the objective structures found in the school, perpetuate social reproduction by encouraging less-privileged students to eliminate themselves from the system, so that fewer and fewer are to be found as one journeys through the levels of the system. The process of social reproduction is neither perfect nor complete, but still, only a small number of less-privileged students achieve success. For the majority of these students who do succeed at school, they have had to internalise the values of the dominant classes and use them as their own, to the detriment of their original habitus and cultural values.

Therefore, Bourdieu’s perspective reveals how objective structures play an important role in determining individual achievement in school, but allows for the exercise of an individual’s agency to overcome these barriers, although this choice is not without its penalties.

Identity

Drawing on Bourdieu’s ideas, Fuller (2009) adds to the theoretical understanding of structure and agency by considering how young people shape their educational identity and how this identity is often the result of messages reflected at them, for example, through grades, setting, gendered expectations etc.. Social location is considered important but its role is complex. Her work considered the importance of understanding the ways that individuals identify within an academic discourse, a discourse that typically situates young people dichotomously; as those who will achieve and those that will not. Understanding the importance of areas such as self-efficacy, confidence and resilience in shaping educational identity at the level of agent and subsequently, educational attainment and aspirations, has been central to her most recent work.

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Pedagogy: An Overview

The study of teaching and its methods as well as the theory of education and its practice is called pedagogy. The content scrutinizes a pedagogical movement called progressive education which focused on a multifaceted approach that uses experience as the fulcrum around which education revolves. The chapter additionally includes two branches of pedagogy that concentrate on adult and older adult education- andragogy and geragogy.

Pedagogy

Pedagogy is the discipline that deals with the theory and practice of education; it thus concerns the study and practice of how best to teach. Its aims range from the general (full development of the human being via liberal education) to the narrower specifics of vocational education (the imparting and acquisition of specific skills).

In correlation with those instructive strategies, the instructor's own philosophical beliefs of instruction are harbored and governed by the pupil's background knowledge and experience, situation, and environment, as well as learning goals set by the student and teacher. One example would be the Socratic schools of thought. The teaching of adults, however, may be referred to as andragogy.

History

Johann Friedrich Herbart (4 May 1776 – 14 August 1841) is the founding father of the conceptualization of pedagogy, or, the theory of education. Herbart's educational philosophy and pedagogy highlighted the correlation between personal development and the resulting benefits to society. In other words, Herbart proposed that humans become fulfilled once they establish themselves as productive citizens. Herbartianism refers to the movement underpinned by Herbart's theoretical perspectives. Referring to the teaching process, Herbart suggested 5 steps as crucial components. Specifically, these 5 steps include: preparation, presentation, association, generalization, and application. Herbart suggests that pedagogy relates to having assumptions as an educator and a specific set of abilities with a deliberate end goal in mind.

Academic Degrees

An academic degree, Ped. D., Doctor of Pedagogy, is awarded honorarily by some US universities to distinguished teachers (in the US and UK, earned degrees within the instructive field are classified as an Ed. D., Doctor of Education or a Ph.D. Doctor of Philosophy). The term is also used to denote an emphasis in education as a specialty in a field (for instance, a Doctor of Music degree in piano pedagogy).

Pedagogues



Douris Man with wax tablet

The word pedagogue was originally used to refer to the slave who escorted Greek children to school.

In Denmark, a pedagogue is a practitioner of pedagogy. The term is primarily used for individuals who occupy jobs in pre-school education (such as kindergartens and nurseries) in Scandinavia. But a pedagogue can occupy various kinds of jobs, e.g. in retirement homes, prisons, orphanages, and human resource management. These are often recognized as social pedagogues as they perform on behalf of society.

The pedagogue's job is usually distinguished from a teacher's by primarily focusing on teaching children life-preparing knowledge such as social skills and cultural norms. There is also a very big focus on care and well-being of the child. Many pedagogical institutions also practice social inclusion. The pedagogue's work also consists of supporting the child in their mental and social development.

In Denmark all pedagogues are trained at a series of national institutes for social educators located in all major cities. The programme is a 3.5-year academic course, giving the student the title of a Bachelor in Social Education (Danish: *Professionsbachelor som pædagog*).

It is also possible to earn a master's degree in pedagogy/educational science from the University of Copenhagen. This BA and MA program has a more theoretical focus compared to the above-mentioned Bachelor in Social Education.

In Hungary, the word pedagogue (*pedagógus*) is synonymous with teacher (*tanár*); therefore,

teachers of both primary and secondary schools may be referred to as pedagogues, a word that appears also in the name of their lobbyist organizations and labor unions (e.g. Labor Union of Pedagogues, Democratic Labor Union of Pedagogues). However, undergraduate education in Pedagogy does not qualify students to become teachers in primary or secondary schools but makes them able to apply to be educational assistants. As of 2013, the 5-year training period was re-installed in place of the undergraduate and postgraduate division which characterized the previous practice.

Progressive Education

Progressive education is a pedagogical movement that began in the late nineteenth century; it has persisted in various forms to the present. The term *progressive* was engaged to distinguish this education from the traditional Euro-American curricula of the 19th century, which was rooted in classical preparation for the university and strongly differentiated by social class. By contrast, progressive education finds its roots in present experience. Most progressive education programs have these qualities in common:

- Emphasis on learning by doing – hands-on projects, expeditionary learning, experiential learning
- Integrated curriculum focused on thematic units
- Integration of entrepreneurship into education
- Strong emphasis on problem solving and critical thinking
- Group work and development of social skills
- Understanding and action as the goals of learning as opposed to rote knowledge
- Collaborative and cooperative learning projects
- Education for social responsibility and democracy
- Highly personalized learning accounting for each individual's personal goals
- Integration of community service and service learning projects into the daily curriculum
- Selection of subject content by looking forward to ask what skills will be needed in future society
- De-emphasis on textbooks in favor of varied learning resources
- Emphasis on lifelong learning and social skills
- Assessment by evaluation of child's projects and productions

Educational Theory

Progressive education can be traced back to the works of John Locke and Jean-Jacques Rousseau, both of whom are known as forerunners of ideas that would be developed by theorists such as Dewey. Locke believed that “truth and knowledge... arise out of observation and experience rather

than manipulation of accepted or given ideas". He further discussed the need for children to have concrete experiences in order to learn. Rousseau deepened this line of thinking in *Emile, or On Education*, where he argued that subordination of students to teachers and memorization of facts would not lead to an education.

Johann Bernhard Basedow

In Germany, Johann Bernhard Basedow (1724-1790) established the Philanthropinum at Dessau in 1774. He developed new teaching methods based on conversation and play with the child, and a program of physical development. Such was his success that he wrote a treatise on his methods, "On the best and hitherto unknown method of teaching children of noblemen".

Christian Gotthilf Salzmann

Christian Gotthilf Salzmann (1744–1811) was the founder of the Schnepfenthal institution, a school dedicated to new modes of education (derived heavily from the ideas of Jean-Jacques Rousseau). He wrote *Elements of Morality, for the Use of Children*, one of the first books translated into English by Mary Wollstonecraft.

Johann Heinrich Pestalozzi

Johann Heinrich Pestalozzi (1746–1827) was a Swiss pedagogue and educational reformer who exemplified Romanticism in his approach. He founded several educational institutions both in German- and French-speaking regions of Switzerland and wrote many works explaining his revolutionary modern principles of education. His motto was "Learning by head, hand and heart". His research and theories closely resemble those outlined by Rousseau in *Emile*. He is further considered by many to be the "father of modern educational science" His psychological theories pertain to education as they focus on the development of object teaching, that is, he felt that individuals best learned through experiences and through a direct manipulation and experience of objects. He further speculated that children learn through their own internal motivation rather than through compulsion. A teacher's task will be to help guide their students as individuals through their learning and allow it to unfold naturally.

Friedrich Fröbel

Friedrich Wilhelm August Fröbel (1782 – 1852) was a student of Pestalozzi who laid the foundation for modern education based on the recognition that children have unique needs and capabilities. He believed in "self-activity" and play as essential factors in child education. The teacher's role was not to indoctrinate but to encourage self-expression through play, both individually and in group activities. He created the concept of kindergarten.

Johann Friedrich Herbart

Johann Friedrich Herbart (1776–1841) emphasized the connection between individual development and the resulting societal contribution. The five key ideas which composed his concept of individual maturation were Inner Freedom, Perfection, Benevolence, Justice, and Equity or Recompense. According to Herbart, abilities were not innate but could be instilled, so a thorough ed-

education could provide the framework for moral and intellectual development. In order to develop a child to lead to a consciousness of social responsibility, Herbart advocated that teachers utilize a methodology with five formal steps: “Using this structure a teacher prepared a topic of interest to the children, presented that topic, and questioned them inductively, so that they reached new knowledge based on what they had already known, looked back, and deductively summed up the lesson’s achievements, then related them to moral precepts for daily living”.

John Melchior Bosco

John Melchior Bosco (1815 – 1888) was concerned about the education of street children who had left their villages to find work in the rapidly industrialized city of Turin, Italy. Exploited as cheap labor or imprisoned for unruly behavior, Bosco saw the need of creating a space where they would feel at home. He called it an ‘Oratory’ where they could play, learn, share friendships, express themselves, develop their creative talents and pick up skills for gainful self-employment. With those who had found work, he set up a mutual-fund society (an early version of the Grameen Bank) to teach them the benefits of saving and self-reliance. The principles underlying his educational method that won over the hearts and minds of thousands of youth who flocked to his oratory were: ‘be reasonable’, ‘be kind’, ‘believe’ and ‘be generous in service’. Today his method of education is practiced in nearly 3000 institutions set up around the world by the members of the Salesian Society he founded in 1873.

Cecil Reddie

While studying for his doctorate in Göttingen in 1882-1883, Cecil Reddie was greatly impressed by the progressive educational theories being applied there. Reddie founded Abbotsholme School in Derbyshire, England in 1889. Its curriculum enacted the ideas of progressive education. Reddie rejected rote learning, classical languages and corporal punishment. He combined studies in modern languages and the sciences and arts with a program of physical exercise, manual labour, recreation, crafts and arts. Abbotsholme was imitated throughout Europe and was particularly influential in Germany. He often engaged foreign teachers, who learned its practices, before returning home to start their own schools. Hermann Lietz an Abbotsholme teacher founded five schools (Landerziehungsheime für Jungen) on Abbotsholme’s principles. Other people he influenced included Kurt Hahn, Adolphe Ferrière and Edmond Demolins. His ideas also reached Japan, where it turned into “Taisho-era Free Education Movement” (Taisho Jiyu Kyoiku Undo)

John Dewey

In the United States the “Progressive Education Movement”, starting in the 1880s and lasting for sixty years, helped boost American public schools from a budding idea to the regular norm. John Dewey, a principal figure in this movement from the 1880s to 1904, set the tone for educational philosophy as well as concrete school reforms. His thinking had been influenced by the ideas of Fröbel and Herbart. His reactions to the prevailing theories and practices in education, corrections made to these philosophies, and recommendations to teachers and administrators to embrace “the new education,” provide a vital account of the history of the development of educational thinking in the late nineteenth and early twentieth centuries. Dewey placed so called pragmatism above moral absolutes and helped give rise to situational ethics. Beginning in 1897 John Dewey pub-

lished a summary of his theory on progressive education in *School Journal*. His theoretical standpoints are divided into five sections outlined below.

What Education is

Education according to Dewey is the “participation of the individual in the social consciousness of the race” (Dewey, 1897, para. 1). As such, education should take into account that the student is a social being. The process begins at birth with the child unconsciously gaining knowledge and gradually developing their knowledge to share and partake in society.

The educational process has two sides, the psychological and the sociological, with the psychological forming the basis. (Dewey, 1897). A child’s own instincts will help develop the material that is presented to them. These instincts also form the basis of their knowledge with everything building upon it. This forms the basis of Dewey’s assumption that one cannot learn without motivation.

Knowledge is a social condition and it is important to help students construct their own learning, as stated: “Hence it is impossible to prepare the child for any precise set of conditions. To prepare him for the future life means to give him command of himself; it means so to train him that he will have the full and ready use of all his capacities; that his eye and ear and hand may be tools ready to command, that his judgment may be capable of grasping the conditions under which it has to work, and the executive forces be trained to act economically and efficiently” (Dewey, 1897, Para. 7).

Instruction must focus on the child as a whole for you can never be sure as to where society may end or where that student will be needed or will take themselves.

What the School is

“Education fails because it neglects this fundamental principle of the school as a form of community life. It conceives the school as a place where certain information is to be given, where certain lessons are to be learned, or where certain habits are to be formed” (Dewey, 1897, para. 17) Dewey felt that as education is a social construct, it is therefore a part of society and should reflect the community.

“Education is the process of living and is not meant to be the preparation of future living,” (Dewey, 1897), so school must represent the present life. As such, parts of the student’s home life (such as moral and ethical education) should take part in the schooling process. The teacher is a part of this, not as an authoritative figure, but as a member of the community who is there to assist the student.

The Subject Matter of Education

According to Dewey, the curriculum in the schools should reflect that of society. The center of the school curriculum should reflect the development of humans in society. The study of the core subjects (language, science, history) should be coupled with the study of cooking, sewing and manual training. Furthermore, he feels that “progress is not in the succession of studies but in the development of new attitudes towards, and new interests in, experience” (Dewey, 1897, para. 38)

The Nature of Method

Method is focused on the child's powers and interests. If the child is thrown into a passive role as a student, absorbing information, the result is a waste of the child's education. (Dewey, 1897). Information presented to the student will be transformed into new forms, images and symbols by the student so that they fit with their development and interests. The development of this is natural. To repress this process and attempt to "substitute the adult for the child" (Dewey, 1897, para. 52) would weaken the intellectual curiosity of the child.

The School and Social Progress

Education is the most fundamental method of social reconstruction for progress and reform. Dewey believes that "education is a regulation of the process of coming to share in the social consciousness; and that the adjustment of individual activity on the basis of this social consciousness is the only sure method of social reconstruction" (Dewey, 1897, para. 60). As such, Dewey gives way to Social Reconstruction and schools as means to reconstruct society. Finally, as schools become a means for social reconstruction, our educations must be given the proper equipment to help perform this task and guide their students.

Laborschule Bielefeld was founded in 1974 in Germany. The Laborschule explicitly uses democratic concepts as suggested by Dewey. Studies in the last years have proven the successful implementation of these concepts into a living community.

Helen Parkhurst

The American teacher Helen Parkhurst (1886-1973) developed at the beginning of the twentieth century the Dalton Plan to reform the then current pedagogics and the then usual manner of classroom management. She wanted to break the teacher-centered lockstep teaching. During her first experiment, which she implemented in a small elementary school as a young teacher in 1904, she noticed that when students are given freedom for self-direction and self-pacing and to help one another, their motivation increases considerably and they learn a lot more. In a later experiment in 1911 and 1912 Parkhurst re-organized the education in a large school for nine to fourteen year-olds. Instead of each grade, each subject was appointed its own teacher and its own classroom. The subject teachers made assignments: they converted the subject matter for each grade into learning assignments. In this way, learning became the students' own work; they could carry out their work independently, work at their own pace and plan their work themselves. The classroom turned into a laboratory, a place where students are working, furnished and equipped as work spaces, tailored to meet the requirements of specific subjects. Useful and attractive learning materials, instruments and reference books were put within the students' reach. The benches were replaced by large tables to facilitate co-operation and group instruction. This second experiment formed the basis for the next experiments, those in Dalton and New York, from 1919 onwards. The only addition was the use of graphs, charts enabling students to keep track of their own progress in each subject. From now on it was called the Dalton Plan.

In the nineteen-twenties and nineteen-thirties, Dalton education was spread throughout the world. There is no certainty regarding the exact numbers of Dalton schools, but there was Dal-

ton education in America, Australia, England, Germany, the Netherlands, the Soviet Union, India, China and Japan. Particularly in the Netherlands, China and Japan, Dalton education has remained in existence. In recent years there has been a revival of international interest. It crops up again, for instance, in England, Germany, the Czech Republic and Slovakia. The Netherlands is the country with the highest density of Dalton schools. At the moment (2013) there are five hundred; most of them elementary schools. Comprising five percent of all elementary schools, Dalton education is by far the largest educational reform movement in the Netherlands. And, contrary to Montessori, Jena Plan and Waldorf education, it is steadily on the increase. The only Dalton school in the USA, is the school that Helen Parkhurst founded herself in 1919, and which she was subsequently to direct for more than twenty years: the Dalton School in New York. It is a renowned school. But today its fame is not due to its origins as an experiment in progressive education: the Dalton School is one of the most expensive private schools in New York.

Rudolf Steiner

Rudolf Steiner (1869-1925) first described the principles of what was to become Waldorf education in 1907. He established a series of schools based on these principles beginning in 1919. The focus of the education is on creating a developmentally-appropriate curriculum that holistically integrates practical, artistic, social, and academic experiences. There are more than a thousand schools and many more early childhood centers worldwide; it has also become a popular form of homeschooling.

Maria Montessori

Maria Montessori (1870-1952) began to develop her philosophy and methods in 1897. She based her work on her observations of children and experimentation with the environment, materials, and lessons available to them. She frequently referred to her work as “scientific pedagogy”. Although Montessori education spread to the United States in 1911 there were conflicts with the American educational establishment and was opposed by William Heard Kilpatrick. However Montessori education returned to the United States in 1960 and has since spread to thousands of schools there.

Robert Baden-Powell

In July 1906, Ernest Thompson Seton sent Robert Baden-Powell a copy of his book *The Birch-bark Roll of the Woodcraft Indians*. Seton was a British-born Canadian-American living in the United States. They shared ideas about youth training programs. In 1907 Baden-Powell wrote a draft called *Boy Patrols*. In the same year, to test his ideas, he gathered 21 boys of mixed social backgrounds and held a week-long camp in August on Brownsea Island in England. His organizational method, now known as the Patrol System and a key part of Scouting training, allowed the boys to organize themselves into small groups with an elected patrol leader. Baden Powell then wrote *Scouting for Boys* (London, 1908). The Brownsea camp and the publication of *Scouting for Boys* are generally regarded as the start of the Scout movement which spread throughout the world. Baden-Powell and his sister Agnes Baden-Powell introduced the Girl Guides in 1910.

Comparison with Traditional Education

Traditional education uses extrinsic motivation, such as grades and prizes. Progressive education is more likely to use intrinsic motivation, basing activities on the interests of the child. Praise may be discouraged as a motivator.

21st Century Skills

21st century skills are a series of higher-order skills, abilities, and learning dispositions that have been identified as being required for success in the rapidly changing, digital society and workplaces. Many of these skills are also defining qualities of *progressive education* as well as being associated with deeper learning, which is based on mastering skills such as analytic reasoning, complex problem solving, and teamwork. These skills differ from traditional academic skills in that they are not primarily content knowledge-based.

Progressive Education in The West

France

Edmond Demolins was inspired by Abbotsholme and Bedales to found the École des Roches in Verneuil-sur-Avre in 1899. Paul Robin implemented progressive principles at the orphanage at Cempuis from 1880 to 1894. This was the first French mixed school, and a scandal at that time. Sebastien Faure in 1904 created a libertarian school 'La Ruche' (the Hive).

Germany

Hermann Lietz founded three Landerziehungsheime (country boarding schools) in 1904 based on Reddie's model for boys of different ages. Lietz eventually succeeded in establishing five more Landerziehungsheime. Edith and Paul Geheeb founded Odenwaldschule in Heppenheim in the Odenwald in 1910 using their concept of progressive education, which integrated the work of the head and hand.

Poland

Janusz Korczak was one notable follower and developer of Pestalozzi's ideas. He wrote *The names of Pestalozzi, Froebel and Spencer shine with no less brilliance than the names of the greatest inventors of the twentieth century. For they discovered more than the unknown forces of nature; they discovered the unknown half of humanity: children.* His Orphan's Home in Warsaw became a model institution and exerted influence on the educational process in other orphanages of the same type.

Spain

In Spain, the Escuela Moderna was founded in 1901 by Francisco Ferrer, a Catalan educator and anarchist. He had been influenced by Cecil Reddie. The Modern Schools, also called 'Ferrer Schools', that were founded in the United States, were based on Escuela Moderna. As in Spain the schools were intended to educate the working-classes from a secular, class-conscious perspective.

The Modern Schools imparted day-time academic classes for children, and night-time continuing-education lectures for adults.

United Kingdom

The ideas from Reddie's Abbotsholme spread to schools such as Bedales School (1893), King Alfred School, London (1898) and St Christopher School, Letchworth (1915), as well as all the Friends' schools, Steiner Waldorf schools and those belonging to the Round Square Conference. The King Alfred School was radical for its time in that it provided a secular education and that boys and girls were educated together. Alexander Sutherland Neill believed children should achieve self-determination and should be encouraged to think critically rather than blindly obeying. He implemented his ideas with the founding of Summerhill School in 1921. Neill believed that children learn better when they are not compelled to attend lessons. The school was also managed democratically, with regular meetings to determine school rules. Pupils had equal voting rights with school staff.

United States

Early Practitioners

Fröbel's student Margarethe Schurz founded the first kindergarten in the United States at Watertown, Wisconsin in 1856, and she also inspired Elizabeth Peabody, who went on to found the first English-speaking kindergarten in the United States – the language at Schurz's kindergarten had been German, to serve an immigrant community – in Boston in 1860. This paved the way for the concept's spread in the USA. The German émigré Adolph Douai had also founded a kindergarten in Boston in 1859, but was obliged to close it after only a year. By 1866, however, he was founding others in New York City.

William Heard Kilpatrick (1871–1965) was a pupil of Dewey and one of the most effective practitioners of the concept as well as the more adept at proliferating the progressive education movement and spreading word of the works of Dewey. He is especially well known for his “project method of teaching”. This developed the progressive education notion that students were to be engaged and taught so that their knowledge may be directed to society for a socially useful need. Like Dewey he also felt that students should be actively engaged in their learning rather than actively disengaged with the simple reading and regurgitation of material.

The most famous early practitioner of progressive education was Francis Parker; its best-known spokesperson was the philosopher John Dewey. In 1875 Francis Parker became superintendent of schools in Quincy, Massachusetts after spending two years in Germany studying emerging educational trends on the continent. Parker was opposed to rote learning, believing that there was no value in knowledge without understanding. He argued instead schools should encourage and respect the child's creativity. Parker's Quincy System called for child-centered and experience-based learning. He replaced the traditional curriculum with integrated learning units based on core themes related to the knowledge of different disciplines. He replaced traditional readers, spellers and grammar books with children's own writing, literature, and teacher prepared materials. In 1883 Parker left Massachusetts to become Principal of the Cook County Normal School in Chicago, a school that also served to train teachers in Parker's methods. In 1894 Parker's Talks on Pedagog-

ics, which drew heavily on the thinking of Fröbel, Pestalozzi and Herbart, became one of the first American writings on education to gain international fame.

That same year, philosopher John Dewey moved from the University of Michigan to the newly established University of Chicago where he became chair of the department of philosophy, psychology and education. He and his wife enrolled their children in Parker's school before founding their own school two years later.

Whereas Parker started with practice and then moved to theory, Dewey began with hypotheses and then devised methods and curricula to test them. By the time Dewey moved to Chicago at the age of thirty-five, he had already published two books on psychology and applied psychology. He had become dissatisfied with philosophy as pure speculation and was seeking ways to make philosophy directly relevant to practical issues. Moving away from an early interest in Hegel, Dewey proceeded to reject all forms of dualism and dichotomy in favor of a philosophy of experience as a series of unified wholes in which everything can be ultimately related.

In 1896, John Dewey opened what he called the laboratory school to test his theories and their sociological implications. With Dewey as the director and his wife as principal, the University of Chicago Laboratory school, was dedicated "to discover in administration, selection of subject-matter, methods of learning, teaching, and discipline, how a school could become a cooperative community while developing in individuals their own capacities and satisfy their own needs." (Cremin, 136) For Dewey the two key goals of developing a cooperative community and developing individuals' own capacities were not at odds; they were necessary to each other. This unity of purpose lies at the heart of the progressive education philosophy. In 1912, Dewey sent out students of his philosophy to found The Park School of Buffalo and The Park School of Baltimore to put it into practice. These schools operate to this day within a similar progressive approach.

At Columbia, Dewey worked with other educators such as Charles Eliot and Abraham Flexner to help bring progressivism into the mainstream of American education. In 1917 Columbia established the Lincoln School of Teachers College "as a laboratory for the working out of an elementary and secondary curriculum which shall eliminate obsolete material and endeavor to work up in usable form material adapted to the needs of modern living." (Cremin, 282) Based on Flexner's demand that the modern curriculum "include nothing for which an affirmative case can not be made out" (Cremin, 281) the new school organized its activities around four fundamental fields: science, industry, aesthetics and civics. The Lincoln School built its curriculum around "units of work" that reorganized traditional subject matter into forms embracing the development of children and the changing needs of adult life. The first and second grades carried on a study of community life in which they actually built a city. A third grade project growing out of the day-to-day life of the nearby Hudson River became one of the most celebrated units of the school, a unit on boats, which under the guidance of its legendary teacher Miss Curtis, became an entrée into history, geography, reading, writing, arithmetic, science, art and literature. Each of the units was broadly enough conceived so that different children could concentrate on different aspects depending on their own interests and needs. Each of the units called for widely diverse student activities, and each sought to deal in depth with some critical aspect of contemporary civilization. Finally each unit engaged children working together cooperatively and also provided opportunities for individual research and exploration.

In 1924, Agnes de Lima, the lead writer on education for *The New Republic* and *Nation*, published a collection of her articles on progressive education as a book, titled *Our Enemy the Child*.

In 1918 The National Education Association, representing superintendents and administrators in smaller districts across the country, issued its report “Cardinal Principles of Secondary Education.” It emphasized the education of students in terms of health, a command of fundamental processes, worthy home membership, vocation, citizenship, worthy use of leisure, and ethical character. They emphasized life adjustment and reflected the social efficiency model of progressive education.

From 1919 to 1955 the Progressive Education Association founded by Stanwood Cobb and others worked to promote a more student-centered approach to education. During the Great Depression the organization conducted an Eight Year study evaluating the effects of progressive programs. More than 1500 students over four years were compared to an equal number of carefully matched students at conventional schools. When they reached college, the experimental students were found to equal or surpass traditionally educated students on all outcomes: grades, extracurricular participation, dropout rates, intellectual curiosity, and resourcefulness. Moreover, the study found that the more the school departed from the traditional college preparatory program, the better was the record of the graduates. (Kohn, *Schools*, 232)

By mid-century many public school programs had also adopted elements of progressive curriculum. At mid-century Dewey believed that progressive education had “not really penetrated and permeated the foundations of the educational institution.” (Kohn, *Schools*, 6,7) As the influence of progressive pedagogy grew broader and more diffuse, practitioners began to vary their application of progressive principles. As varying interpretations and practices made evaluation of progressive reforms more difficult to assess, critics began to propose alternative approaches.

The seeds of the debate over progressive education can be seen in the differences of Parker and Dewey. These have to do with how much and by whom curriculum should be worked out from grade to grade, how much the child’s emerging interests should determine classroom activities, the importance of child-centered vs. societal-centered learning, the relationship of community building to individual growth, and especially the relationship between emotion, thought and experience.

In 1955 the publication of Rudolf Flesch’s *Why Johnny Can’t Read* leveled criticism of reading programs at the progressive emphasis on reading in context. The conservative McCarthy era raised questions about the liberal ideas at the roots of the progressive reforms. The launching of Sputnik in 1957 at the height of the cold war gave rise to a number of intellectually competitive approaches to disciplinary knowledge, such as BSCS biology PSSC physics, led by university professors such as Jerome Bruner and Jerrold Zacharias.

Interestingly, some of the cold war reforms incorporated elements of progressivism. For example, the work of Zacharias and Bruner was based in the developmental psychology of Jean Piaget and incorporated many of Dewey’s ideas of experiential education. Bruner’s analysis of developmental psychology became the core of a pedagogical movement known as constructivism, which argues that the child is an active participant in making meaning and must be engaged in the progress of education for learning to be effective. This psychological approach has deep connections to the work of both Parker and Dewey and led to a resurgence of their ideas in second half of the century.

In 1965, President Johnson inaugurated the Great Society and the Elementary and Secondary Education Act suffused public school programs with funds for sweeping education reforms. At the same time the influx of federal funding also gave rise to demands for accountability and the behavioral objectives approach of Robert F. Mager and others foreshadowed the No Child Left Behind Act passed in 2002. Against these critics eloquent spokespersons stepped forward in defense of the progressive tradition. The Open Classroom movement, led by Herb Kohl and George Dennison, recalled many of Parker's child centered reforms.

The late 1960s and early 1970s saw a rise and decline in the number of progressive schools. There were several reasons for the decline:

- **Demographics:** As the baby boom passed, traditional classrooms were no longer as over-enrolled, reducing demand for alternatives.
- **The economy:** The oil crisis and recession made shoestring schools less viable.
- **Times changed:** With the ending of the Vietnam War, social activism waned.
- **Co-optation:** Many schools were co-opted by people who didn't believe in the original mission.
- **Centralization:** The ongoing centralization of school districts
- **Non-implementation:** Schools failed to implement a model of shared governance
- **Interpersonal dynamics:** Disagreement over school goals, poor group process skills, lack of critical dialogue, and fear of assertive leadership

Progressive education has been viewed as an alternative to the test-oriented instruction legislated by the No Child Left Behind educational funding act. Alfie Kohn has been an outspoken critic of the No Child Left Behind Act and a passionate defender of the progressive tradition.

Taxpayer revolts, leading to cuts in funding for public education in many states, have led to the founding of an unprecedented number of independent schools, many of which have progressive philosophies. The charter school movement has also spawned an increase in progressive programs. Most recently, public outcry against No Child Left Behind testing and teaching to the test has brought progressive education again into the limelight. Despite the variations that still exist among the progressive programs throughout the country, most progressive schools today are vitalized by these common practices:

- The curriculum is more flexible and is influenced by student interest
- Teachers are facilitators of learning who encourage students to use a wide variety of activities to learn
- Progressive teachers use a wider variety of materials allowing for individual and group research.
- Progressive teachers encourage students to learn by discovery
- Progressive education programs often include the use of community resources and encourage service-learning projects.

Education Outside of Schools

Organizations like the Boy Scouts of America and Camp Fire arose, even amidst concerns by opponents of the progressive movement in the United States, because some people felt that social welfare of young men should be maintained through education alone. After decades of growing interest in and development of experiential education and scouting (not Scouting) in the United States, and the emergence of the Scout Movement in 1907, in 1910 Boy Scouts of America was founded in the merger of three older Scouting organizations: Boy Scouts of the United States, the National Scouts of America and the Peace Scouts of California. Its founder, Chicago publisher W. D. Boyce was visiting London, in 1909, when he met the Unknown Scout and learned of the Scouting movement. Soon after his return to the U.S., Boyce incorporated the Boy Scouts of America on February 8, 1910. Edgar M. Robinson and Lee F. Hanmer became interested in the nascent BSA program and convinced Boyce to turn the program over to the YMCA for development. Robinson enlisted Ernest Thompson Seton, Daniel Carter Beard and other prominent leaders in the early youth movements. After initial development, Robinson turned the movement over to James E. West who became the first Chief Scout Executive and the Scouting movement began to expand in the U.S. As BSA grew, it absorbed other Scouting organizations.

Developments Since the 1950s

Changes in educational establishments came about as US Americans and Europeans began to feel they had fallen behind the Soviet Union technologically after the successful launch of *Sputnik 1* in October 1957. A rethinking of education theory following that, along with the subsequent and prevailing conservative political climate, helped to cause progressivism to fall from favor.

Andragogy

Andragogy is the theory and practice of education of adults. The word is a combination of andro (from Ancient Greek: *nēr*, genitive, *andros*, “man”) and meaning “to lead”. It arose from the practice of pedagogy to address the specific needs in the education of adults as opposed to the education of children.

Definitions

Two primary understandings of “andragogy” currently exist:

1. The science of understanding (= theory) and supporting (= practice) lifelong and life-wide education of adults.
2. In the tradition of Malcolm Knowles, a specific theoretical and practical approach, based on a humanistic conception of self-directed and autonomous learners and teachers as facilitators of learning.

Interpreted broadly throughout the academic literature, the term also invites such definitions as “adult education practice”, “desirable values”, “specific teaching methods”, “reflections”, and “academic discipline”, with many authors claiming it to be better than traditional adult education.

The term has been used by some to allow discussion of contrast between self-directed and “taught” education.

Principles

Adult learning is based upon comprehension, organization and synthesis of knowledge rather than rote memory. Seven Principles of Adult Learning:

- Adults must want to learn They learn effectively only when they are free to direct their own learning and have a strong inner and excited motivation to develop a new skill or acquire a particular type of knowledge, this sustains learning.
- Adults will learn only what they feel they need to learn Adults are practical in their approach to learning; they want to know, “How is this going to help me right now? – Is it relevant (Content, Connection and Application) and does it meet my targeted goals.”
- Adults learn by doing Adolescents learn by doing, but adults do through an active practice and participation, this helps in integrating component skills into a coherent whole.
- Adult learning focuses on problems solving Adolescents learn skills sequentially. Adults start with a problem and then work to find a solution. A meaningful engagement, such as posing and answering realistic questions and problems is necessary for deeper learning. This leads to more elaborate, longer lasting, and stronger representations of the knowledge (Craik and Lockhart, 1972).
- Experience affects adult learning Adults have more experience than adolescents. This can be an asset and a liability, if prior knowledge is inaccurate, incomplete, or naive, it can interfere with or distort the integration of incoming information (Clement, 1982; National Research Council, 2000).
- Adults learn best in an informal situation Adolescents have to follow a curriculum. Often, adults learn by taking responsibility by the value and need of content they have to understand and the particular goals it will achieve. Being in an inviting, collaborative and networking environment as an active participant in the learning process makes it efficient.
- Adults want guidance and consideration as equal partners in the process Adults want information that will help them improve their situation. They do not want to be told what to do and they evaluate what helps and what doesn't. They want to choose options based on their individual needs and meaningful impact a learning engagement could provide. Socialization is more important among adults.

History

Originally used by Alexander Kapp (a German educator) in 1833, andragogy was developed into a theory of adult education by Eugen Rosenstock-Huessy and was popularized in the US by American educator Malcolm Knowles. Knowles asserted that andragogy (Greek: “man-leading”) should be distinguished from the more commonly used *pedagogy* (Greek: “child-leading”).

Knowles collected ideas about a theory of adult education from the end of WWII until he was

introduced to the term “andragogy”. In 1966, Knowles met Dusan Savicevic in Boston. Savicevic shared the term andragogy with Knowles, and explained how it was used in the European context. In 1967, Knowles made use of the term “androgogy” to explain his theory of adult education. Then, after consulting Merriam-Webster, he corrected the spelling of the term to “andragogy” and continued to make use of the term to explain his collection of ideas about adult learning.

Knowles’ theory can be stated with six assumptions related to motivation of adult learning:

1. Need to know: Adults need to know the reason for learning something.
2. Foundation: Experience (including error) provides the basis for learning activities.
3. Self-concept: Adults need to be responsible for their decisions on education; involvement in the planning and evaluation of their instruction.
4. Readiness: Adults are most interested in learning subjects having immediate relevance to their work and/or personal lives.
5. Orientation: Adult learning is problem-centered rather than content-oriented.
6. Motivation: Adults respond better to internal versus external motivators.

In most countries of Europe, the Knowles discussion played, at best, a marginal role. “Andragogy” was, from 1970 on, connected with emerging academic and professional institutions, publications, or programs, triggered by a similar growth of adult education in practice and theory as in the United States. “Andragogy” functioned here as a header for (places of) systematic reflections, parallel to other academic headers like “biology”, “medicine”, and “physics”. Examples of this use of andragogy are the Yugoslavian (scholarly) journal for adult education, named *Andragogija* in 1969, and the Yugoslavian Society for Andragogy; at Palacky University in Olomouc (Czech republic) the *Katedra sociologie a andragogiky* (Sociology and Andragogy Department) was established in 1990. Also, Prague University has a *Katedra Andragogiky* (Andragogical Department); in 1993, Slovenia’s *Andragoski Center Republike Slovenije* (Slovenian Republic Andragogy Center) was founded with the journal *Andragoska Spoznanja*; in 1995, Bamberg University (Germany) named a *Lehrstuhl Andragogik* (Androgogy Chair).

On this formal level “above practice” and specific approaches, the term “andragogy” could be used relating to all types of theories, for reflection, analysis, training, in person-oriented programs, or human resource development.

Academic Discipline

In the field of adult education during recent decades, a process of growth and differentiation emerged as a scholarly and scientific approach, andragogy. Andragogy refers to the academic discipline(s) within university programs that focus on the education of adults; andragogy exists today worldwide. The term refers to a new type of education which was not qualified by missions and visions, but by academic learning including: reflection, critique, and historical analyses.

Dusan Savicevic, who provided Knowles with the term andragogy, explicitly claims andragogy as

a discipline, the subject of which is the study of education and learning of adults in all its forms of expression' (Savicevic, 1999, p. 97, similarly Henschke, 2003, Reischmann, 2003).

Recent research has expanded andragogy into the online world, finding that using collaborative tools like a wiki can encourage learners to become more self-directed, thereby enriching the classroom environment. It gives scope to self-directed learners. Andragogy helps in designing and delivering the solution focused instructions to self-directed. The methods used by andragogy can be used in different educational environments (e.g. adolescent education).

Differences from Pedagogy

Here are some of the main differences between pedagogy and andragogy:

	PEDAGOGY	ANDRAGOGY
LEARNER:	<ul style="list-style-type: none"> –The learner is dependent on the instructor, the teacher schedules all the activities; determining how, when and where they should take place –Teacher is the one who is responsible for what is taught and how it is taught –Teacher evaluates the learning 	<ul style="list-style-type: none"> –Learner is self-directed and moves towards independence –Learner is responsible for the learning –Self-evaluation is seen
LEARNER'S EXPERIENCE	<ul style="list-style-type: none"> –There is little experience which could be gained from this kind of learning –Method is didactic 	<ul style="list-style-type: none"> –There is large quantity of experience gained – Method used is problem solving, discussion, service-learning
READINESS TO LEARN	<ul style="list-style-type: none"> –Standardized curriculum set which will be based on societal needs 	<ul style="list-style-type: none"> –Curriculum is more application based and it revolves around life
ORIENTATION TO LEARNING	<ul style="list-style-type: none"> –Here, it is a process of acquiring subject matter 	<ul style="list-style-type: none"> –Here learning is for performing tasks and solving problems
MOTIVATION	<ul style="list-style-type: none"> –Motivation is by external pressure, and there is lot of competition for grades 	<ul style="list-style-type: none"> –It is driven by internal motivation. Includes self-actualisation, self-confidence etc.

Optimal Learning

Neuroscientist and educator Eric Jensen's factors for optimal learning include:

- Personal meaning.
- Circumstances present.
- Personal-concept. (A person's collection of thoughts about beliefs, experiences, values and knowledge.)
- Mode of sensory input. (Visual; auditory; kinesthetic; olfactory; gustatory.)
- Information processing. (Learning styles; processing states like linear, holistic, random, logical, concrete, reality based, temporal, non-temporal...etc.; artistic/analytic orientation; abstract/concrete...etc.)
- Responses. (Theory of multiple intelligences.)

Critique

Knowles himself changed his position on whether andragogy really applied only to adults and came to believe that “pedagogy-andragogy represents a continuum ranging from teacher-directed to student-directed learning and that both approaches are appropriate with children and adults, depending on the situation.” Hanson (1996) argues that the difference in learning is not related to the age and stage of one’s life, but instead related to individual characteristics and the differences in “context, culture and power” within different educational settings.

In another critique of Knowles’ work, Knowles was not able to use one of his principles (Self-concept) with adult learners to the extent that he describes in his practices. In one course, Knowles appears to allow “near total freedom in learner determination of objectives” but still “intended” the students to choose from a list of 18 objectives on the syllabus. Self-concept can be critiqued not just from the instructor’s point of view, but also from the student’s point of view. Not all adult learners will know exactly what they want to learn in a course and may seek a more structured outline from an instructor. An instructor cannot assume that an adult will desire self-directed learning in every situation.

J.R. Kidd goes further by claiming that principles of learning have to be applied to lifelong development. He suggested that building a theory on adult learning would be meaningless, as there is no real basis for it. P. Jarvis even implies that andragogy would be more the result of an ideology than a scientific contribution to the comprehension of the learning processes. Knowles himself mentions that andragogy is a “model of assumptions about learning or a conceptual framework that serves as a basis for an emergent theory.” There appears to be a lack of research on whether this framework of teaching and learning principles is more relevant to adult learners or if it is just a set of good practices that could be used for both children and adult learners.

Geragogy

Geragogy is a theory which argues that older adults are sufficiently different that they warrant a separate educational theory. The term “eldergogy” has also been used. Some critics have noted that “one should not expect from geragogy some comprehensive educational theory for older adult learners, but only an awareness of and sensitivity towards gerontological issues”.

Key distinctions between traditional pedagogy and geragogy include offering “opportunities for older adult learners to set the curriculum themselves and to learn through activities of personal relevance” as well as recognition of age-related issues which may affect learning, such as reduced sensory perception, limited motor capabilities and changes in cognitive processes, especially memory.

Collaborative peer learning, as employed in the University of the Third Age, is a common element within geragogic settings.

Principles of Geragogy

Learning should aim to provide skills and resources which maintain personal independence. Useful, practical outcomes must therefore be highlighted before a course of study

begins, and any assigned tasks must have meaning for older adults. Enjoyment, curiosity, seeking information and desiring communication are typical routes into learning.

- Variety in teaching methods is required, rather than reliance on lengthy verbal presentations. A flexible, interdisciplinary approach which responds to the needs of the learners present is vital.
- Tutors should strive to maintain a clear focus on the topic, limiting the number of ideas presented. Irrelevant or overly distracting concepts should be avoided.
- In place of discipline or rote-learning, tutors should stimulate engagement with warmth, positive comments, approval and encouragement.
- Learners may take longer to complete tasks and assignments than younger people. They may also wish to return repeatedly to a task until they feel comfortable. Examples should be reinforced regularly and often, using differing contexts in order to give as many opportunities as possible for learners to grasp a concept.
- The past experiences of learners can be useful in grounding their understanding. Tutors should seek to review specific skills which allow each learner to be creative in their own way, building on their personal life experience. It is also important to review information that may have been learned in the past (such as at school) but has not been used for some time.



Older people in a peer learning setting

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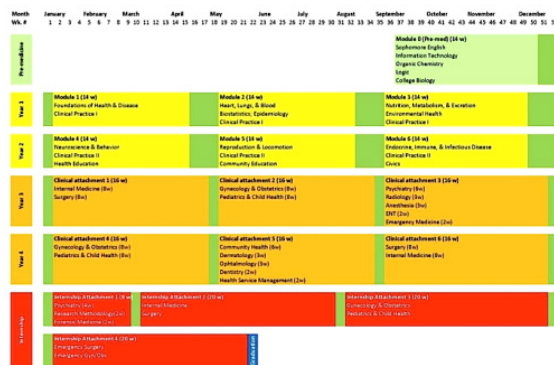
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Curriculum: An Integrated Study

The entirety of the educational experiences in a student’s life is known as curriculum. Curriculum could vary from highly organized and sequential to autonomous depending on the region, age of learner and other factors. Curriculum studies delve into understanding how curriculum actively shapes a person’s educational experience. Further this chapter reviews the different school organizational models. The topics discussed in the chapter are of great importance to broaden the existing knowledge on education.

Curriculum



A curriculum for the MD degree.

In education, a curriculum is broadly defined as the totality of student experiences that occur in the educational process. The term often refers specifically to a planned sequence of instruction, or to a view of the student’s experiences in terms of the educator’s or school’s instructional goals. In a 2003 study Reys, Reys, Lapan, Holliday and Wasman refer to curriculum as a set of learning goals articulated across grades that outline the intended mathematics content and process goals at particular points in time throughout the K–12 school program. Curriculum may incorporate the planned interaction of pupils with instructional content, materials, resources, and processes for evaluating the attainment of educational objectives. Curriculum is split into several categories, the explicit, the implicit (including the hidden), the excluded and the extra-curricular.

Curricula may be tightly standardized, or may include a high level of instructor or learner autonomy. Many countries have national curricula in primary and secondary education, such as the United Kingdom’s National Curriculum.

UNESCO’s International Bureau of Education has the primary mission of studying curricula and their implementation worldwide.

Etymology

The word “curriculum” began as a Latin word which means “a race” or “the course of a race” (which in turn derives from the verb *currere* meaning “to run/to proceed”). The first known use in an educational context is in the *Professio Regia*, a work by University of Paris professor Petrus Ramus published posthumously in 1576. The term subsequently appears in University of Leiden records in 1582. The word’s origins appear closely linked to the Calvinist desire to bring greater order to education.



First published use of “curriculum” in 1576.

By the seventeenth century, the University of Glasgow also referred to its “course” of study as a “curriculum”, producing the first known use of the term in English in 1633. By the nineteenth century, European universities routinely referred to their curriculum to describe both the complete course of study (as for a degree in surgery) and particular courses and their content.

Definitions and Interpretations

There is no generally agreed upon definition of curriculum. Some influential definitions combine various elements to describe curriculum as follows:

- Kerr defines curriculum as, “All the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside of school.”
- Braslavsky states that curriculum is an agreement among communities, educational professionals, and the State on what learners should take on during specific periods of their lives. Furthermore, the curriculum defines “why, what, when, where, how, and with whom to learn.”
- Outlines the skills, performances, attitudes, and values pupils are expected to learn from schooling. It includes statements of desired pupil outcomes, descriptions of materials, and the planned sequence that will be used to help pupils attain the outcomes.
- The total learning experience provided by a school. It includes the content of courses (the syllabus), the methods employed (strategies), and other aspects, like norms and values, which relate to the way the school is organized.
- The aggregate of courses of study given in a learning environment. The courses are arranged in a sequence to make learning a subject easier. In schools, a curriculum spans several grades.

- Curriculum can refer to the entire program provided by a classroom, school, district, state, or country. A classroom is assigned sections of the curriculum as defined by the school.
- Through the readings of Smith, Dewey, and Kelly, four curriculums could be defined as:
- **Explicit curriculum:** subjects that will be taught, the identified “mission” of the school, and the knowledge and skills that the school expects successful students to acquire.
- **Implicit curriculum:** lessons that arise from the culture of the school and the behaviors, attitudes, and expectations that characterize that culture, the unintended curriculum.
- **Hidden curriculum:** things which students learn, ‘because of the way in which the work of the school is planned and organized but which are not in themselves overtly included in the planning or even in the consciousness of those responsible for the school arrangements (Kelly, 2009). The term itself is attributed to Philip W. Jackson and is not always meant to be a negative. Hidden curriculum, if its potential is realized, could benefit students and learners in all educational systems. Also, it does not just include the physical environment of the school, but the relationships formed or not formed between students and other students or even students and teachers (Jackson, 1986).
- **Excluded curriculum:** topics or perspectives that are specifically excluded from the curriculum.
- **Extracurricular:** May include school-sponsored programs, which are intended to supplement the academic aspect of the school experience, or community-based programs and activities. Examples of school-sponsored extracurricular programs include sports, academic clubs, and performing arts. Community-based programs and activities may take place at a school (after hours) but are not linked directly to the school. Community-based programs frequently expand on the curriculum that was introduced in the classroom. For instance, students may be introduced to environmental conservation in the classroom. This knowledge is further developed through a community-based program. Participants then act on what they know with a conservation project. Community-based extracurricular activities may include “environmental clubs, 4-H, boy/girl scouts, and religious groups” (Hancock, Dyk, & Jones, 2012).

Curriculum can be ordered into a procedure:

Step 1: Diagnosis of needs.

Step 2: Formulation of objectives.

Step 3: Selection of content.

Step 4: Organization of content.

Step 5: Selection of learning experiences.

Step 6: Organization of learning experiences.

Step 7: Determination of what to evaluate and of the ways and means of doing it.

Under some definitions, curriculum is prescriptive, and is based on a more general syllabus which merely specifies what topics must be understood and to what level to achieve a particular grade or standard. The word Syllabus originates from Greek. The Greek meaning of the word basically means a “concise statement or table of the heads of a discourse, the contents of a treatise, the subjects of series of lectures.

‘Curriculum’ has numerous definitions, which can be slightly confusing. In its broadest sense a curriculum may refer to all courses offered at a school, explicit. The intended curriculum, which the students learn through the culture of the school, implicit. The curriculum that is specifically excluded, like racism. Plus, the extra curricular activities like sports, and clubs. This is particularly true of schools at the university level, where the diversity of a curriculum might be an attractive point to a potential student.

A curriculum may also refer to a defined and prescribed course of studies, which students must fulfill in order to pass a certain level of education. For example, an elementary school might discuss how its curriculum, or its entire sum of lessons and teachings, is designed to improve national testing scores or help students learn the basics. An individual teacher might also refer to his or her curriculum, meaning all the subjects that will be taught during a school year.

On the other hand, a high school might refer to a curriculum as the courses required in order to receive one’s diploma. They might also refer to curriculum in exactly the same way as the elementary school, and use curriculum to mean both individual courses needed to pass, and the overall offering of courses, which help prepare a student for life after high school.

Curriculum can be envisaged from different perspectives. What societies envisage as important teaching and learning constitutes the “intended” curriculum. Since it is usually presented in official documents, it may be also called the “written” and/or “official” curriculum. However, at classroom level this intended curriculum may be altered through a range of complex classroom interactions, and what is actually delivered can be considered the “implemented” curriculum. What learners really learn (i.e. what can be assessed and can be demonstrated as learning outcomes/learner competencies) constitutes the “achieved” or “learned” curriculum. In addition, curriculum theory points to a “hidden” curriculum (i.e. the unintended development of personal values and beliefs of learners, teachers and communities; unexpected impact of a curriculum; unforeseen aspects of a learning process). Those who develop the intended curriculum should have all these different dimensions of the curriculum in view. While the “written” curriculum does not exhaust the meaning of curriculum, it is important because it represents the vision of the society. The “written” curriculum is usually expressed in comprehensive and user-friendly documents, such as curriculum frameworks; subject curricula/syllabuses, and in relevant and helpful learning materials, such as textbooks; teacher guides; assessment guides.

In some cases, people see the curriculum entirely in terms of the subjects that are taught, and as set out within the set of textbooks, and forget the wider goals of competencies and personal development. This is why a curriculum framework is important. It sets the subjects within this wider context, and shows how learning experiences within the subjects need to contribute to the attainment of the wider goals.

There are many common misconceptions of what curriculum is and one of the most common is

that curriculum only entails a syllabus. Smith (1996,2000) says that, “A syllabus will not generally indicate the relative importance of its topics or the order in which they are to be studied. Where people still equate curriculum with a syllabus they are likely to limit their planning to a consideration of the content or the body of knowledge that they wish to transmit”. Regardless of the definition of curriculum, one thing is certain. The quality of any educational experience will always depend to a large extent on the individual teacher responsible for it (Kelly, 2009).

Curriculum is almost always defined with relation to schooling. According to some, it is the major division between formal and informal education. However, under some circumstances it may also be applied to informal education or free-choice learning settings. For instance, a science museum may have a “curriculum” of what topics or exhibits it wishes to cover. Many after-school programs in the US have tried to apply the concept; this typically has more success when not rigidly clinging to the definition of curriculum as a product or as a body of knowledge to be transferred. Rather, informal education and free-choice learning settings are more suited to the model of curriculum as practice or praxis.

Historical Conception

“	Action is response; it is adaptation, adjustment. — John Dewey	”
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In the early years of the 20th century, the traditional concepts held of the “curriculum is that it is a body of subjects or subject matter prepared by the teachers for the students to learn.” It was synonymous to the “course of study” and “syllabus”.

In *The Curriculum*, the first textbook published on the subject, in 1918, John Franklin Bobbitt said that curriculum, as an idea, has its roots in the Latin word for *race-course*, explaining the curriculum as the course of deeds and experiences through which children become the adults they should be, *for success in adult society*. Furthermore, the curriculum encompasses the entire scope of formative deed and experience occurring in and out of school, and not only experiences occurring in school; experiences that are unplanned and undirected, and experiences intentionally directed for the purposeful formation of adult members of society. (cf. image at right.)

To Bobbitt, the curriculum is a social engineering arena. Per his cultural presumptions and social definitions, his curricular formulation has two notable features: (i) that scientific experts would best be qualified to and justified in designing curricula based upon their expert knowledge of what qualities are desirable in adult members of society, and which experiences would generate said qualities; and (ii) curriculum defined as the deeds-experiences the student *ought to have* to become the adult he or she *ought to become*.

Hence, he defined the curriculum as an ideal, rather than as the concrete reality of the deeds and experiences that form people to who and what they are.

Contemporary views of curriculum reject these features of Bobbitt’s postulates, but retain the basis of curriculum as the course of experience(s) that forms human beings into persons. Personal formation via curricula is studied at the personal level and at the group level, i.e. cultures and societies (e.g. professional formation, academic discipline via historical experience). The formation of a group is reciprocal, with the formation of its individual participants.

Although it formally appeared in Bobbitt's definition, curriculum as a course of formative experience also pervades John Dewey's work (who disagreed with Bobbitt on important matters). Although Bobbitt's and Dewey's idealistic understanding of "curriculum" is different from current, restricted uses of the word, curriculum writers and researchers generally share it as common, substantive understanding of curriculum. Development does not mean just getting something out of the mind. It is a development of experience and into experience that is really wanted.

Robert M. Hutchins, president of the University of Chicago, regarded curriculum as "permanent studies" where the rules of grammar, rhetoric and logic and mathematics for basic education are emphasized. Basic education should emphasize 3 Rs and college education should be grounded on liberal education. On the other hand, Arthur Bestor as an essentialist, believes that the mission of the school should be intellectual training, hence curriculum should focus on the fundamental intellectual disciplines of grammar, literature and writing. It should also include mathematics, science, history and foreign language.

This definition leads us to the view of Joseph Schwab that discipline is the sole source of curriculum. Thus in our education system, curriculum is divided into chunks of knowledge we call subject areas in basic education such as English, Mathematics, Science, Social Studies and others. In college, discipline may include humanities, sciences, languages and many more. Curriculum should consist entirely of knowledge which comes from various disciplines. To learn the lesson is more interesting than to take a scolding, be held up to general ridicule, stay after school, receive degrading low marks, or fail to be promoted.

Thus, curriculum can be viewed as a field of study. It is made up of its foundations (philosophical, historical, psychological, and social foundations); domains of knowledge as well as its research theories and principles. Curriculum is taken as scholarly and theoretical. It is concerned with broad historical, philosophical and social issues and academics. Under a starting definition offered by John Kerr and taken up by Vic Kelly in his standard work on the curriculum, curriculum is "all the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside the school.

Four ways of approaching curriculum theory and practice:

1. Curriculum as a body of knowledge to be transmitted.
2. Curriculum as an attempt to achieve certain ends in students – products.
3. Curriculum as a process .
4. Curriculum as praxis.

In recent years the field of education, and therefore curriculum, has expanded outside the walls of the classroom and into other settings such as museums. Within these settings curriculum is an even broader topic, including various teachers such as other visitors, inanimate objects such as audio tour devices, and even the learners themselves. As with the traditional idea of curriculum, curriculum in a free choice learning environment can consist of the explicit stated curriculum and the hidden curriculum, both of which contribute to the learner's

experience and lessons from the experience. These elements are further compounded by the setting, cultural influences, and the state of mind of the learner. Museums and other similar settings are most commonly leveraged within traditional classroom settings as enhancements to the curriculum when educators develop curriculum that encompasses visits to museums, zoos, and aquarium.

Progressivist Views

On the other hand, to a progressivist, a listing of school subjects, syllabi, course of study, and list of courses of specific discipline do not make a curriculum. These can only be called curriculum if the written materials are actualized by the learner. Broadly speaking, curriculum is defined as the total learning experiences of the individual. This definition is anchored on John Dewey's definition of experience and education. He believed that reflective thinking is a means that unifies curricular elements. Thought is not derived from action but tested by application.

Caswell and Campbell viewed curriculum as "all experiences children have under the guidance of teachers." This definition is shared by Smith, Stanley and shores when they defined "curriculum as a sequence of potential experiences set up in schools for the purpose of disciplining children and youth in group ways of thinking and acting."

Curriculum as a process is when a teacher enters a particular schooling and situation with: an ability to think critically, in-action; an understanding of their role and the expectations others have of them; and a proposal for action which sets out essential principles and features of the educational encounter. Guided by these, they encourage conversations between, and with, people in the situation out of which may come a course of thinking and action. Plus, the teacher continually evaluates the process and what they can see of outcomes.

Marsh and Willis on the other hand view curriculum as all the "experiences in the classroom which are planned and enacted by teacher, and also learned by the students.

Any definition of curriculum, if it is to be practically effective and productive, must offer much more than a statement about knowledge-content or merely the subjects which schooling is to teach or transmit or deliver. Some would argue of the course that the values implicit in the arrangements made by schools for their pupils are quite clearly in the consciousness of teachers and planners, again especially when the planners are politicians, and are equally clearly accepted by them as part of what pupils should learn in school, even though they are not overtly recognized by the pupils themselves. In other words, those who design curricula deliberately plan the schools' 'expressive culture'. If this is the case, then, the curriculum is 'hidden' only to or from the pupils, and the values to be learnt clearly from a part of what is planned for pupils. They must, therefore, be accepted as fully a part of the curriculum, and most especially as an important focus for the kind of study of curriculum with which we are concerned here, not least because important questions must be asked concerning the legitimacy of such practices.

Currently, a spiral curriculum is promoted as allowing students to revisit a subject matter's content at the different levels of development of the subject matter being studied. The constructivist approach proposes that children learn best via pro-active engagement with the educational environment, i.e. learning through discovery.

Primary and Secondary Education

A curriculum may be partly or entirely determined by an external, authoritative body (e.g., the National Curriculum for England in English schools).

Crucial to the curriculum is the definition of the course objectives that usually are expressed as learning outcomes and normally include the program's assessment strategy. These outcomes and assessments are grouped as units (or modules), and, therefore, the curriculum comprises a collection of such units, each, in turn, comprising a specialised, specific part of the curriculum. So, a typical curriculum includes communications, numeracy, information technology, and social skills units, with specific, specialized teaching of each.

Core curricula are often instituted, at the primary and secondary levels, by school boards, Departments of Education, or other administrative agencies charged with overseeing education. A core curriculum is a curriculum, or course of study, which is deemed central and usually made mandatory for all students of a school or school system. However, even when core requirements exist, they do not necessarily involve a requirement for students to engage in one particular class or activity. For example, a school might mandate a music appreciation class, but students may opt out if they take a performing musical class, such as orchestra, band, chorus, etc.

Japan

The Japanese educational system is based off traditional values from their heritage with curriculum ideas borrowed from England, Germany, France and the United States. The Japanese curriculum is world-famous. Their math and science standards are among the most demanding in the developed countries. Students in Japan are expected to know more about another country's history, economics, and geography than their own country. Japanese students cannot skip grades and are not held back. They are expected to master the curriculum at every level. Due to their meritocratic nature, all students are funded equitably and follow exactly the same curriculum with the same expectations. Students that are ahead in class are expected to help those that are not. Beyond the academics, students are expected to clean the classrooms and the hallways to teach respect and responsibility.

Australia

In Australia, the Australian Curriculum took effect nationwide in 2014, after a curriculum development process that began in 2010. Previously, each state's Education Department had traditionally established curricula. The Australian Curriculum consists of one curriculum covering eight subject areas through year 10, and another covering fifteen subjects for the senior secondary years.

Nigeria

In 2005, the Nigerian government adopted a national Basic Education Curriculum for grades 1 through 9. The policy was an outgrowth of the Universal Basic Education program announced in 1999, to provide free, compulsory, continuous public education for these years. In 2014, the government implemented a revised version of the national curriculum, reducing the number of subjects covered from 20 to 10.

South Korea

The National Curriculum of Korea covers kindergarten, primary, and secondary education, as well as special education. The version currently in place is the 7th National Curriculum, which has been revised in 2007 and 2009. The curriculum provides a framework for a common set of subjects through 9th grade, and elective subjects in grades 10 through 12.

United Kingdom

The National Curriculum was introduced into England, Wales and Northern Ireland as a nationwide curriculum for primary and secondary state schools following the Education Reform Act 1988. Notwithstanding its name, it does not apply to independent schools, which may set their own curricula, but it ensures that state schools of all local education authorities have a common curriculum. Academies, while publicly funded, have a significant degree of autonomy in deviating from the National Curriculum.

The purpose of the National Curriculum was to standardise the content taught across schools to enable assessment, which in turn enabled the compilation of league tables detailing the assessment statistics for each school. These league tables, together with the provision to parents of some degree of choice in assignment of the school for their child (also legislated in the same act) were intended to encourage a 'free market' by allowing parents to choose schools based on their measured ability to teach the National Curriculum.

United States

In the U.S., each state, with the individual school districts, establishes the curricula taught. Each state, however, builds its curriculum with great participation of national academic subject groups selected by the United States Department of Education, e.g. National Council of Teachers of Mathematics (NCTM) nctm.org for mathematical instruction.

The Common Core State Standards Initiative promulgates a core curriculum for states to adopt and optionally expand upon. This coordination is intended to make it possible to use more of the same textbooks across states, and to move toward a more uniform minimum level of educational attainment.

South Africa

In South Africa the Caps curriculum is used in Public schools. Private schools use IEB, Cambridge, etc.

Higher Education

Many educational institutions are currently trying to balance two opposing forces. On the one hand, some believe students should have a common knowledge foundation, often in the form of a core curriculum; on the other hand, others want students to be able to pursue their own educational interests, often through early specialty in a major, however, other times through the free choice of courses. This tension has received a large amount of coverage due to Harvard University's reorganization of its core requirements.



Moscow Institute of Physics and Technology student examines the university's main class schedule board on the first day of classes to find what classes he – and all students in his specialization (sub-major) – will attend this semester.

Many labor economics studies report that employment and earnings vary by college major and this appears to be *caused* by differences in the labor market value of the skills taught in different majors. Majors also have different labor market value even after students complete graduate degrees such as law degrees or business degrees.

An essential feature of curriculum design, seen in every college catalog and at every other level of schooling, is the identification of prerequisites for each course. These prerequisites can be satisfied by taking particular courses, and in some cases by examination, or by other means, such as work experience. In general, more advanced courses in any subject require some foundation in basic courses, but some coursework requires study in other departments, as in the sequence of math classes required for a physics major, or the language requirements for students preparing in literature, music, or scientific research. A more detailed curriculum design must deal with prerequisites within a course for each topic taken up. This in turn leads to the problems of course organization and scheduling once the dependencies between topics are known.

Russia

Core curriculum has typically been highly emphasized in Soviet and Russian universities and technical institutes.

United States

Core Curriculum

At the undergraduate level, individual college and university administrations and faculties sometimes mandate core curricula, especially in the liberal arts. But because of increasing specialization and depth in the student's major field of study, a typical core curriculum in higher education mandates a far smaller proportion of a student's course work than a high school or elementary school core curriculum prescribes.

Amongst the best known and most expansive core curricula programs at leading American colleges and universities are that of Columbia University, as well as the University of Chicago's. Both can take up to two years to complete without advanced standing, and are designed to foster critical

skills in a broad range of academic disciplines, including: the social sciences, humanities, physical and biological sciences, mathematics, writing and foreign languages.



Shimer College students discussing texts in the school's core curriculum.

In 1999, the University of Chicago announced plans to reduce and modify the content of its core curriculum, including lowering the number of required courses from 21 to 15 and offering a wider range of content. When *The New York Times*, *The Economist*, and other major news outlets picked up this story, the University became the focal point of a national debate on education. The National Association of Scholars released a statement saying, “It is truly depressing to observe a steady abandonment of the University of Chicago’s once imposing undergraduate core curriculum, which for so long stood as the benchmark of content and rigor among American academic institutions.” Simultaneously, however, a set of university administrators, notably then-President Hugo Sonnenschein, argued that reducing the core curriculum had become both a financial and educational imperative, as the university was struggling to attract a commensurate volume of applicants to its undergraduate division compared to peer schools as a result of what was perceived by the pro-change camp as a reaction by “the average eighteen-year-old” to the expanse of the collegiate core.

As core curricula began to diminish over the course of the twentieth century at many American schools, some smaller institutions became famous for embracing a core curriculum that covers nearly the student’s entire undergraduate education, often utilizing classic texts of the western canon to teach all subjects including science. Four Great Books colleges in the United States follow this approach: St. John’s, Shimer, Thomas Aquinas, Gutenberg College and Thomas More.

Distribution Requirements

Some colleges opt for the middle ground of the continuum between specified and unspecified curricula by using a system of distribution requirements. In such a system, students are required to take courses in particular fields of learning, but are free to choose specific courses within those fields.

Open Curriculum

Other institutions have largely done away with core requirements in their entirety. Brown University offers the “New Curriculum,” implemented after a student-led reform movement in 1969, which allows students to take courses without concern for any requirements except those in their chosen concentrations (majors), plus two writing courses. In this vein it is certainly possible for

students to graduate without taking college-level science or math courses, or to take only science or math courses. Amherst College requires that students take one of a list of first-year seminars, but has no required classes or distribution requirements. Similarly, Grinnell College requires students to take a First-Year Tutorial in their first semester, and has no other class or distribution requirements. Others include Evergreen State College, Hamilton College, and Smith College.

Wesleyan University is another school that has not and does not require any set distribution of courses. However, Wesleyan does make clear “General Education Expectations” such that if a student does not meet these expectations, he/she would not be eligible for academic honors upon graduation.

Curriculum Studies

Curriculum studies (CS) is a concentration within curriculum and instruction concerned with understanding curricula as an active force of human educational experience.

Specific questions related to curriculum studies include the following:

- What should be taught in schools?
- Why should it be taught? To whom should it be taught?
- What does it mean to be an educated person?

Proponents of CS also investigate the relationship between curriculum theory and educational practice and the relationship between school programs and the contours of the society and culture in which schools are located. There are programs in the field of curriculum studies in several Colleges of Education around the world. Curriculum Studies was also the first subdivision of the American Educational Research Association, known as Division B.

Important CS books include *The Curriculum: Perspective, Paradigm, and Possibility* by William Schubert (New York: Macmillan, 1986; and *Understanding Curriculum* by William Pinar, et al. (New York: Peter Lang Publishing, 1995).

Curriculum Studies emerged as a distinctive field in the late 1960s and early 1970s from educationists focused on curriculum development. The shift from developing and evaluating curriculum to understanding curriculum is known as the “Reconceptualization” of the curriculum field.

A branch of curriculum studies that investigates how society transmits culture from generation to generation has been tagged with the term “Hidden curriculum” even though much of what is studied is hiding in plain sight. For instance, one of the 19th Century founders of the discipline of Sociology, Émile Durkheim, observed that more is taught and learned in schools than specified in the established curriculum of textbooks and teacher manuals. In *Moral Education* Durkheim wrote:

“In fact, there is a whole system of rules in the school that predetermine the child’s conduct. He must come to class regularly, he must arrive at a specified time and with an appropriate bearing and attitude. He must not disrupt things in class. He must have learned his lessons, done his homework, and have done so reasonably well, etc. There are, therefore, a host of

obligations that the child is required to shoulder. Together they constitute the discipline of the school. It is through the practice of school discipline that we can inculcate the spirit of discipline in the child. (Durkheim, Émile (1961 [1925]). *Moral Education*. New York, The Free Press.p. 148)”

Phillip W. Jackson (1968) may have coined the term “hidden curriculum” in his book *Life in Classrooms*. He argued that primary school emphasized specific skills: learning to wait quietly, exercising restraint, trying, completing work, keeping busy, cooperating, showing allegiance to both teachers and peers, being neat and punctual, and so on (Jackson, Philip (1968). *Life in Classrooms*.). The structural functional sociologist Robert Dreeben (1968 *On What is Learned in School*) similarly concluded that the curriculum of schooling taught students to “form transient social relationships, submerge much of their personal identity, and accept the legitimacy of categorical treatment”. Dreeben argued that formal schooling indirectly conveyed to students values such as independence and achievement, essential for their later membership in society.

Since then, Curriculum Studies researchers ranging across the spectrum of paradigms — from conservative structural-functionalists, to neo-Marxists to narrative- and arts-based researchers — have examined formal curricula, experienced curricula, and hidden curricula. Progressive researchers like Paul Willis (1977, *Learning to Labor: How Working Class Kids Get Working Class Jobs*), Jean Anyon (1980, “Social Class and the Hidden Curriculum of Work.” *Journal of Education* 162), and Annette Laureau (1989.*Home Advantage: Social Class, and Parental Intervention in Elementary Education*) have examined the ways that hidden and overt curricula reproduce social class position. Narrative and arts-based researchers like Thomas Barone (2001, *Touching Eternity: The Enduring Outcomes of Teaching*) have inquired about the long-term effects of curricula on student lives.

Critical theorists like Henry Giroux (1983 “Theories of Reproduction and Resistance in the New Sociology of Education: A critical analysis.” *Harvard Educational Review* 53) began to examine the roles of students and teachers in resisting curricula both official and hidden. So-called “resistance theorists” conceptualized students and teachers as active agents working to subvert, reject, or change curricula. They noted that “curriculum” was not a unified structure but incoherent conflicting and contradictory messages. Other researchers have examined the interactions between racial and ethnic cultures and the dominant curricula of the school. For instance the Anthropologist John Ogbu examined curricula established by African American students (Signithia Fordham and John Ogbu 1986 “Black Students’ School Success: Coping with the Burden of ‘Acting White.’” *The Urban Review* 18. Critical Race Theorists Critical race theory like Daniel Solórzano examined how racial attitudes constitute another “hidden” curriculum in teacher education programs (1997, *Images and Words that Wound: Critical Race Theory and Racial Stereotyping, and Teacher Education, Teacher Education Quarterly*, 24). Additionally, Judith Stacey proposed in the 1960s schools conveyed a hidden curriculum that perpetuated the “sexist beliefs, attitudes, and values” of the time period (1974 “And Jill Came Tumbling After Sexism in American Education”).

The interest in Curriculum Studies is thus cross disciplinary and of increasing importance to educational research and to the philosophy of education.

School Organizational Models

School organizational models are methods of structuring the curriculum, functions, and facilities

for schools, colleges, and universities. The organizing of teaching and learning has been structured since the first educational institutions were established. With greater specialization and expertise in a particular field of knowledge, and a gathering of like-minded individuals, instructors clustered into specialized groups, schools, and eventually departments within larger institutions. This structure spread rapidly during the 19th and 20th centuries with factory model schools and their “assembly-line” method of standardized curriculum and instructional methods. Beginning with the progressive educational movement in the early-mid 20th century, and again with similar trends in the late 20th and early 21st century, alternative models structured towards deeper learning, higher retention, and 21st century skills developed. The organizational models of schools fall into several main categories, including: departmental, integrative, project-based, academy, small learning communities, and school-within-a-school.

Departmental Model

The departmental model is an organization where the departments and faculties of different academic subjects are separate and distinct. Each department (e.g. Math, Humanities, Science) may also have its own head (or manager or dean) that is responsible for different aspects of the department. Educators in that department may report to that head who in turn reports to a higher level administration, such as a school or college in a university, or directly to the main administration, such as the principal or head of a school. Educational institutions using the departmental model often provide traditional education. This is a traditional form of organization with an emphasis on traditional classroom forms and organizations that has been the dominant organizing model of high or secondary schools, colleges, and universities since the late 19th and early 20th century. This is reflected in the design of educational facilities with separate faculty buildings on a campus, or in a wing or cluster of standard classrooms or laboratories in a high school (e.g. science labs, vocational shops).

- Master’s School Building - traditional plan school

Integrative Model

The integrative model is an interdisciplinary organization that combines, rather than separates, academic subjects, faculties, and disciplines. A departmental structure may be in place for each field or discipline, but the physical organization of the educational facilities may place different subject-based classrooms or labs in groupings, such as in a defined area, wing, or small learning community. For example, each grouping may contain co-located classrooms with different instructors focusing on math, English, and Social Sciences near to a Science lab, Makerspace, or Vocational shop. Support spaces for instructors, such as offices or workrooms, and for students, such as seminar rooms and common workspaces, may also be located directly adjacent or nearby.

- Integrative model diagram, DesignShare P.131.

Project Based Learning Model

The project-based learning model is a model that supports students “learning by doing.” It may or not be fully interdisciplinary in its organization of subjects. Unlike traditional, teacher-led classroom-based instruction, students often must organize their own work and manage their own time

in a project-based class, with an emphasis on student collaboration and hands-on work. It involves independent research, real-world experiences, opportunities and requirements for students to present and defend their learning, to practice and rehearse. Student projects are at the core of their learning. This is reflected in the design of educational facilities appearing similar to the integrative model, but with a de-emphasis on traditional instructional spaces such as classrooms and labs, and a greater emphasis on student collaboration spaces and workspaces, such as individual study and group seminar rooms, and workspaces such as Makerspaces and rooms with 2D or 3D printing and production. The design is student-centered, meaning it is to support the project work, not primarily the convenience of the teachers (e.g. classrooms). A noted example of this model is High Tech High.

- Project-based learning model: plan diagram, P. 139 and P. 141

Academy Model

The Academy model is an organization that includes specific themes or grades-based within a single institution. These are sometimes referred to as “Career Academies” or “Career Pathways”. The school may be organized along largely departmental or integrated models, with specialty courses geared towards the theme or focus of each academy provided within each academy and the students be enrolled and following their academy’s prescribed course of study as they take courses in different departments. Alternatively, the school may be organized with each academy providing its own core and specialty themed courses. This can be reflected in the design of educational facilities in several ways: a departmental-type configuration with specialty spaces located in separate areas, or along a single common area with each academy’s themed spaces adjacent and observables by students in other academies; or in a similar manner to a SLC or school-within-a-school, with each academy co-located with their specialty space. For example, a justice-themed academy may have a fully functioning country courtroom off of the commons, such as along the “Main Street” in the Jack E. Singley Academy.

Small Learning Communities Model

The Small Learning Community (SLC) model is an organization geared towards providing a more personalized learning environment. A cohort of students and instructors may stay within a given SLC from grade to grade. Teachers in the SLC usually have common planning time to foster collaboration, development of interdisciplinary projects, and to track progress of individual students across subjects. These include several types, including: Theme-Based SLCs or Focus Schools, usually formed around a specific curricular theme, such as “Success Academy” or “Humanities”; grade-based SLCs or Houses, such as Freshman Academies which are structured to support students transitioning into higher-level schools; Career Academies, developed around a career theme or Career Clusters; Magnet Schools, career-themed SLCs that include accelerated course-work for Gifted & Talented students. This is reflected in the design of educational facilities with SLCs designed into separate clusters or groupings, often with a central common or flexible learning area at its heart of the cluster, with a variety of learning and group meeting rooms opening onto it, including several classrooms or learning studios, a science lab, and potentially a makerspace or vocational shop. A school would have multiple SLCs, often with between 100 and 200 students.

- Small Learning Communities plan diagram
- LAUSC Small Learning Communitites plan diagram, page 24

School-within-a-school Model

The school-within-a-school model is similar to the Small Learning Communities model of personalization for both students and schools, but with additional administrative and support functions located within each school or “community”. Each school has both multiple disciplines as well as separate administrators, either fully stand-alone or as subordinate to a whole-school administration or principal. This is reflected in the design of educational facilities with a larger school building, or a campus, with separate identities, entries, and often names for each small school. An example of this model is the Marysville Getchell Campus with separate buildings for each of the three small schools as well as a common shared facility for the physicals.education, cafeteria, and services functions not as easily supported by smaller schools.

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Various Educational Specializations

Educational specializations build definitive skill-sets in various fields like agriculture, visual arts, physical education and legal studies. This approach helps hone and nurture innate talent besides developing interest and prompting students to decide on professional careers. This content seeks to deepen the understanding of educational specializations in these fields.

Agricultural Education



The Texas Technological College Dairy Barn was used as an agricultural teaching facility until 1967.

Agricultural Education is the teaching of agriculture, natural resources, and land management through hands on experience and guidance to prepare students for entry level jobs or to further education to prepare them for advanced agricultural jobs. Classes that may be taught in an agricultural education curriculum include horticulture, land management, turf grass management, agricultural science, small animal care, machine and shop classes, health and nutrition, livestock management, biology courses, etc. Agricultural education can be taught at the elementary level, middle school level, secondary, post secondary and adult levels. Elementary agriculture is taught in public schools and private schools, and deals with such subjects as how plants and animals grow and how soil is farmed and conserved. Vocational agriculture trains people for jobs in such areas as production, marketing, and conservation. College agriculture involves training of people to teach, conduct research, or provide information to advance the field of agriculture and food science in other ways. General education agriculture informs the public about food and agriculture.

In the United States

The chief sources of agriculture education in the United States are:

- High Schools

- Community Colleges
- Universities and colleges
- Youth organization
- 10x15

Elementary School

In 2006, Walton Rural Life Center in Walton, Kansas was the first public elementary school in the United States to base its curriculum around agriculture.

High Schools

Agricultural education at the high school level focuses on three main categories: classroom instruction, supervised agricultural experience (SAE), and active involvement in the National FFA Organization (Future Farmers of America).

- **Classroom Instruction-** classroom instruction of an agricultural class teaches the students the basic concepts of the particular course through hands on learning and experience. Students will be taught the information in the curriculum in order for them to understand and develop skills in the application and problem solving issues that would occur in an agricultural setting. Another requirement for agricultural education at the high school level is the Young Farmers association group, but this is a requirement for the teacher, not the students.
- **Supervised Agricultural Experience-** The supervised Agricultural Experience (SAE) portion of the agricultural curriculum is when a student must use the knowledge they have gained in the classroom instruction and use it in real life situations. Several topic choices are available for the student to choose between, whether it is on a farm setting, exploratory setting, entrepreneurship, agribusiness, or research projects. The student will choose a task from one of these topic areas and conduct a research experiment throughout the course of the agricultural class. The teacher is involved in the process and will help guide the student along the way. SAE programs give students the opportunity to take the information learned in the classroom setting and use it on an agricultural topic that interests them. This portion of an agricultural education will give students an idea of how it is working out in the real world and solving problems that will arise in the work field.
- **National FFA Organization-** The FFA is a national organization that all agricultural classes at the high school level are involved in. The agricultural teacher is the leader of that particular schools FFA chapter, and will guide students' activities and programs held throughout the year. FFA is an educational program designed to teach students leadership skills in both agricultural settings and everyday life, encourages personal growth in students, boosts self-confidence, builds character, encourage healthy lifestyles, and give students opportunities to be a part of the agricultural economy. FFA chapters will volunteer in communities, conduct banquets for FFA members and their families, raise awareness of agriculture, compete in FFA competitions, and attend national FFA conventions.

- Young Farmers Association- Young Farmers Association is a requirement that any agricultural teacher must meet. This is a group led by the agricultural teacher that meets usually monthly. The group will consist of all the local farmers, citizens, or anyone interested in learning more about agriculture and the new methods that are being created. The Young Farmers Association is designed so that the technologies made in the agricultural field will be introduced and used in the economy. It also gives the agricultural teachers the opportunity to meet the local citizens and reach out in the community.

Colleges and Universities



College of Agriculture at the University of Florida

Agricultural education is taught on the college level as well. Degrees in agricultural education can be used to teach agriculture or obtain a job in an agricultural related work field. This degree can give students the qualifications and knowledge necessary to teach agricultural classes such as the courses offered at the high school level. Students will be required to complete agriculture classes as well as education classes in order to become qualified to teach. A bachelor's degree in agricultural education will qualify a person to teach classes all the way up to the high school level. A Master's degree is required in order to teach on the college level. An agricultural education degree also gives the qualifications to do extension work for universities and agriculture related companies and organizations. Colleges and universities award about 21,000 bachelor's degrees in agriculture each year (1988). About 6,000 other students receive a master's or doctor's degree (1988).

Universities Involved With Agricultural Education Teacher Education

To teach agricultural education in secondary schools, certification programs exist. The following universities provide pathways to complete certification requirements of their home states in secondary agricultural education:

- Middle Tennessee State University
- Montana State University
- North Carolina State University
- North Dakota State University

- Oregon State University
- The Pennsylvania State University, Degree Requirements
- South Dakota State University, Degree Requirements
- The University of Idaho
- Texas A&M University
- University of Missouri
- Utah State University
- Washington State University
- West Virginia University

Land-grant Universities

Land-grant universities award more than three-quarters of all agricultural degrees (1988). These state schools receive federal aid under legislation that followed the Morrill Act of 1862, which granted public lands to support agricultural or mechanical education. Land-grant universities have three chief functions:

- Teaching
- Research
- Extension/Outreach

Teaching

Colleges of agriculture prepare students for careers in all aspects of the food and agricultural system. Some career choices include food science, veterinary science, farming, ranching, teaching, marketing, agricultural communication, management, and social services.

The Association for Career and Technical Education (ACTE), the largest national education association dedicated to the advancement of education that prepares youth and adults for careers, provides resources for agricultural education.

Research

Each land-grant university has an agricultural experiment station equipped with laboratories and experimental farms. There, agricultural scientists work to develop better farming methods, solve the special problems of local farmers, and provide new technology. Research published in scholarly journals about agricultural safety is available from the NIOSH-supported National Agricultural Safety Database. The American Dairy Science Association provides research and education scholarships focused on the dairy farm and processing industries.

1. Journal of Agricultural Education
2. Journal of Extension

3. Journal of International Agricultural and Extension Education
4. Journal of Agricultural Education and Extension
5. Journal of Leadership Education
6. Journal of Applied Communication
7. Journal of Career & Technical Education
8. Career & Technical Education Research
9. North American Colleges and Teachers of Agriculture Journal

Extension Service

The Cooperative Extension System is a partnership of the federal, state, and county governments. This service distributes information gathered by the land-grant universities and the U.S. Department of Agriculture to farmers, families, and young people. County extension agents, located in most countries (1988), train and support about 3 million (1988) volunteer leaders. Agents and volunteers carry out extension programs through meetings, workshops, newsletters, radio, television, and visits.

Closely Related Disciplines

Agricultural Communications

Agricultural Leadership

Extension Education

Related Professional Organizations

American Association for Agricultural Education (AAAE)

Association of Career and Technical Education (ACTE)

National Association of Agricultural Education (NAAE)

The Council for Agricultural Education

Youth Organizations

Youth organizations involved in agricultural education include 4-H and National FFA Organization (FFA).

- 4H Club- 4H Club is considered a youth development program that teaches children about sciences, leadership, research, etc. 4H club has over 6 million members nationwide and is the largest youth development organization in the United States. 4H members use hands on learning to reach goals and help in communities. Members of 4-H carry out group and individual projects dealing with conservation, food and agricul-

ture, health and safety, and other subjects. The 4-H program in the United States is part of the Cooperative Extension service.

- **National FFA Organization-** The FFA is a national organization that teaches students leadership skills and is designed to help members become more well rounded citizens in the agricultural field. The FFA is an integral part of the program of agricultural education in many high schools as a result of Public Law 740 in 1950 (Currently revised as Publication 105-225 of the 105th Congress of the United States), with 500,823 FFA members (2007–2008). Local chapters participate in Career Development Events (individually and as a team), each student has a Supervised Agricultural Experience program (SAE), and participates in many conferences and conventions to develop leadership, citizenship, patriotism and excellence in agriculture. The National FFA Organization is structured from the local chapter up, including local districts, areas, regions, state associations, and the national level. The FFA Mission is to make a positive difference in the lives of students by developing their potential for premier leadership, personal growth, and career success through agricultural education.

History

The rapid growth of agricultural education began during the late 19th century. In 1862, the United States Congress created the Department of Agriculture to gather and distribute agricultural information. The Morrill Act, which provided the land-grant schools, became law that same year. The Hatch Act of 1887 gave federal funds to establish agricultural experiment stations. The first dairy school in the U.S. was created at the University of Wisconsin–Madison in 1890.

Government support for agricultural education has increased during the 20th century. For example, the Smith-Lever Act of 1914 created what is now the Cooperative Extension System (1988). The Smith-Hughes Act of 1917 and the George-Barden Act of 1946 financed high-school instruction in farming. Woodlawn High School (Woodlawn, Virginia) was the first public high school in the United States to offer agricultural education classes under the Smith-Hughes Act. The Vocational Education Act of 1963 funded training in other fields of agriculture.

Agricultural science and education expanded after 1900 in response to a need for more technical knowledge and skill. This development led to the use of modern farming methods that required fewer farmworkers. Another major result of this change was the creation of larger farms and ranches. This development increased the need for more agriculture science and education. Other legislation influenced the development of agricultural education into what the field is today. It has developed throughout the last century from various laws and pieces of legislation. Some of the laws include:

- Education for All Handicapped Children Act of 1975- this law required all public schools to provide a free and appropriate education to all students with disabilities. Children with disabilities were allowed to enroll in agricultural classes.
- Americans with Disabilities Act of 1986- This law required public schools to give students with disabilities equal opportunities as all the other students. It required teachers to let students with disabilities participate in more agricultural based classes.

- Educate America Act of 1994- This raised the standards for public education and the goals that school districts had for their students. The curriculum and development requirements became stricter for all classes, including agricultural classes.
- School-to-Work Opportunities Act of 1994- This law required teachers to teach students tasks and disciplines that would help their students prepare for employment once they graduated. Teaching real life applications in agriculture was a major part of this law because of the need for employment in the agricultural field.
- No Child Left Behind (Elementary and Secondary Education Act of 2001) - Raised the standards for students in public schools and the requirements of the teachers. This law helped provide financial support for public schools in low income areas.

In Other Countries



Hurlstone Agricultural High School in Australia maintains a dairy with 42 head of cattle.

The history of agricultural education predates USA activities and derives from, the development of Scottish, Italian and German colleges. The land grant approach of the USA owes much to the Scottish system in particular. Changes in higher agricultural education around the world today are highlighting implicit approaches that have hampered development and exceptional advances that have fed the world. the process has been described in one text (below) which takes a global perspective.

Agricultural education in other countries resembles that in the United States. Canada has its own 4-H program. Agriculture Canada distributes information on new farming methods and maintains experimental farms, research stations, and research institutions throughout the country. BC Agriculture in the Classroom Foundation operates in the province of British Columbia. In Australia, each state has several agricultural research stations and an extension service. Great Britain has a program of youth clubs called Young Farmer's Clubs that resemble 4-H. The Food and Agriculture Organisation of the United Nations works to train people throughout the world in modern farming methods. The United States gives technical assistance to farmers in developing nations through its Agency for International Development (AID).

Australia



Farrer Memorial Agricultural High School

As of February 2015 Agriculture in Australia employs over 235,300 people in the agriculture, fishing and forestry and fishing industry. This industry alone equates to 12% share of the GDP earning close to \$155 billion a year. The farmers own a combined 135,997 farms covering approximately 61% of the land mass.

Given these figures the agricultural programs in place in school and universities in very important to the future of the county. Several high schools operate across the country specifying in agriculture education. Predominantly these high schools are set in the rural areas with access to land. On the majority of cases the students often travel 1000 km to attend schools, taking up residence at the schools as boarders for the school term. The one of the biggest in Australia is Farrer Memorial Agricultural High School in central New South Wales. The Agriculture in Education programme launched by the Australian government in 2015 helps teachers better understand the products and processes associated with food and fibre production and gives students an opportunity to understand the importance of agriculture in the Australian economy. Topics covered by the materials include: designing and making a financial plan for a market garden, free range chicken farming, food security, and sustainable production practices in food and fibre. The agricultural environment has changed enormously over the past 15 years, with greater emphasis on product quality issues, vertical integration from production to consumer, diversity in demand options, and environmental namely drought, welfare and ethical issues. This has led to the way the content of curriculums and the way they are delivered.

Western Australia

In Western Australia, The Western Australian College of Agriculture is the primary provider of high schools in the state providing excellent educational opportunities at six campuses located near Cunderdin, Denmark, Esperance, Harvey, Morawa and Narrogin. Each Campus has modern facilities on commercial sized farms and offers Year 10, 11 and 12 programs for male and female students. The students study a range of School Curriculum and Standards Authority subjects leading to Secondary Graduation and the Western Australian Certificate of Education and also complete vocational qualifications from Industry Training Packages.

The major focus is on the study of agriculture but the program may also include horticulture, viticulture, equine, aquaculture, forestry, building construction, metals and engineering and automotive. Each Campus offers some specialist programs that can lead to tertiary study and apprenticeships and careers in a range of agriculture related vocations. Tertiary studies located in Perth are available at Curtin University, Murdoch University and Muresk Institute offering degrees in Agriculture including Agricultural Business Management and Agricultural Science. Western Australian is in a precarious position and faces several challenges, fact that agriculture in Australia is affected by an ongoing shortage of labour and of skills. Labour supply is being adversely affected by an ageing workforce, retirements by baby boomers, seasonal nature of the lower skilled workforce and an inability to attract sufficient young people to work in the industry.

10x15 Long Range Goal for Agricultural Education in America

“By 2015 there will be in operation 10,000 quality agricultural science education programs serving students through an integrated model of classroom/laboratory instruction, experiential learning, and leadership and personal skill development. Further, all students will be members of the FFA and have a supervised agricultural experience that supports classroom and laboratory instruction.”
.-Team Ag Ed

The Case for Growth and Quality in Agricultural Education

Of the critical issues facing the nation, few are more compelling than improving the academic performance of public schools and ensuring a stable, safe and affordable food supply. Today agricultural education is positioned to contribute substantially in these arenas through a major national initiative. Under the direction of The National Council for Agricultural Education, the “10x15 Long Range Goal for Agricultural Education” employs a comprehensive strategy engaging eight high-priority initiatives. The focus of the unprecedented effort is twofold: create new programs in communities not yet served by agricultural education and FFA, and ensure the quality and high performance of current programs providing personal, academic and career education in agriculture. While the goal of “10x15” is to grow the number of agricultural education programs from 7,200 to 10,000 by the year 2015, the clear emphasis is on quality.

Several factors make this effort timely and essential. First, the public’s expectations for higher student achievement are leading to dramatic increases in accountability, standards, rigor and relevance throughout education. Especially critical is the need to raise math and science proficiency. Second, the industry of agriculture, already concerned about meeting growing domestic and global demands for food and fiber, is eager to identify the future managers, leaders and workers who will ensure the future security and productivity of agriculture. A forecasted shortage of well-educated workers is adding urgency to the issue. Also, concerns about food safety, security and independence are registering at the highest levels of agribusiness and government. Lastly, local communities are intent on cultivating leadership and securing effective participation from their citizens. Through the intra-curricular programs of agricultural education and the FFA, a half-million students are developing skills in leadership, communication, team building and civic engagement. They will be prepared to provide for the social, economic and cultural well-being of small communities and large urban centers alike.

The work of “10x15” is concentrated in eight national task forces operating over the next several years. Their scope of work includes national program and content standards; teacher recruitment and preparation; alternative program design; data reporting; public advocacy; brand communication strategy; and program funding. Driving the work of “10x15” are more than a hundred top leaders drawn from today’s Team Ag Ed, including teachers, students, university educators, state education leaders, the National FFA Organization, alumni, business and industry, and key stakeholders

Visual Arts Education



1881 painting by Marie Bashkirtseff, *In the Studio*, depicts an art school life drawing session, *Dnipropetrovsk State Art Museum*, Dnipropetrovsk, Ukraine

Visual arts education is the area of learning that is based upon only the kind of art that one can see, visual arts—drawing, painting, sculpture, and design in jewelry, pottery, weaving, fabrics, etc. and design applied to more practical fields such as commercial graphics and home furnishings. Contemporary topics include photography, video, film, design, and computer art. Art education may focus on students creating art, on learning to criticize or appreciate art, or some combination of the two.

Approaches



Art model posing in a French painting school following the atelier method



Discussion class on art appreciation at Shimer College

Art is often taught through drawing, an empirical activity which involves seeing, interpreting and discovering appropriate marks to reproduce an observed phenomenon. Drawing instruction has been a component of formal education in the West since the Hellenistic period. In East Asia, arts education for nonprofessional artists typically focused on brushwork; calligraphy was numbered among the Six Arts of gentlemen in the Chinese Zhou Dynasty, and calligraphy and Chinese painting were numbered among the Four Arts of scholar-officials in imperial China.

An alternative approach to art education involves an emphasis on imagination, both in interpreting and creating art. Alternative approaches, such as visual culture and issue-based approaches in which students explore societal and personal issues through art, also inform art education today.

Prominent curricular models for art education include:

- A sixfold model divided into “Creative-Productive, Cultural-Historical and Critical-Responsive” components in some provinces of Canada
- Discipline Based Art Education (DBAE) came to favor in the United States during the 1980s and 1990s, and it focused on specific skills including techniques, art criticism and art history. Heavily backed by the Getty Education Institute for the Arts, DBAE faded after the Institute ceased funding in 1998.
- Teaching for Artistic Behavior (TAB) is a choice-based model that began in the 1970s in Massachusetts in the United States. TAB suggests that students should be the artists and be guided on their own individual artistic interests.

In addition, especially in higher education in the liberal arts tradition, art is often taught as “art appreciation”, a subject for aesthetic criticism rather than direct engagement.

Some studies show that strong art education programs have demonstrated increased student performance in other academic areas, due to art activities’ exercising their brains’ right hemi-spheres and delateralizing their thinking.

Art education is not limited to formal educational institutions. Some professional artists provide

private or semi-private instruction in their own studios. This may take the form of an apprenticeship in which the student learns from a professional artist while assisting the artist with their work. One form of this teaching style is the Atelier Method as exemplified by Gustave Moreau who taught Picasso, Braque and many other artists.

Apprenticeship



The Drawing Class, by Michiel Sweerts, c. 1656

Historically art was taught in Europe via the atelier method system where artists took on apprentices who learned their trade in much the same way as that of guilds such as the stonemasons or goldsmiths. During their free time formal training took place in art workshops or, more often, in homes or alone outside. It was in these ateliers that artists learned the craft through apprenticeship to masters, a relationship that was controlled by guild statutes. Florentine contracts dating from the late 13th century state that the master was expected to clothe and feed the apprentice, who was called upon to be a faithful servant in return. An apprentice often paid the master during the early years of his education; assuming the apprenticeship was productive, the student would be compensated later in his training. Northern European workshops featured similar terms.

Initially, learning to draw was a priority in this system. Michelangelo recommended that a young painter spend a year on drawing alone, then six years grinding colors, preparing panels and using gold leaf, during which time the study of drawing would continue. Another six years would be required to master fresco and tempera painting.

Historically, design has had some precedence over the fine arts with schools of design being established all over Europe in the 18th century. These examples of skill and values from the early European art inspired later generations, including the Colonists of early America.

Cultural Appropriation Within the Classroom

Individuals who employ cultural appropriation have the ability to produce works of considerable aesthetic merit. Using properties of art from different cultures such as decoration or emulation of creative process can foster a greater understanding and appreciation of crafts from different cultures. This technique can be appreciated in the production of African or Native-American mask making projects, where students emulate technique and explore new material use and construction methods which esteem those practices of different cultures.

By Country

Australia

Australian Universities which have Visual / Fine Art departments or courses within their institutions have moved from Studio Based teaching models, associated with Art Schools, to more integrated theoretical / practical emphasis. University of Western Australia has moved from a master's degree with theoretical emphasis to a theoretical BA Art degree.

Studio based teaching initiatives integrating contextual and media elements have been implemented as part of a national Studio Teaching Project supported by the Australian Learning and Teaching Council (ALTC) since 2007.

Egypt

The first modern art school in Egypt was opened in 1908 as the Cairo College of Fine Arts. These early art schools largely taught the Western aesthetic traditions. As a result, after independence there was an effort to incorporate Egyptian and Middle Eastern traditions into art and art appreciation courses. However, the process was slow; students at Cairo College of Fine Arts were not able to major in non-European art history until 1999.

Italy

Art schools were established in Italy as early as the 13th century, starting with a painting school in Venice founded by a Greek painter named Theophanes around 1200.

The Netherlands

The Dutch Art Teachers Association (Nederlandse Vereniging voor Tekenonderwijs) was founded in 1880 and began to publish a monthly magazine in 1884. Since the late 20th century, the growing diversity of Dutch society has made Dutch art and art education increasingly multicultural.

United Kingdom

Formal art education emerged in the United Kingdom in the early 19th century, motivated in part by a desire to match the quality of design work being done in France. The model initially adopted was that of the German commercial schools. Prince Albert was particularly influential in the creation of schools of Art in the UK.

Currently in the UK, the art curriculum is prescribed by the government's National Curriculum except in public or fee paying schools. Prince Charles has created The Prince's Drawing School in Hoxton to preserve the teaching of academic drawing.

United States

Adult art education class at the Brooklyn Museum in 1935.

The study of art appreciation in America began with the Artists of Today Movement in the late 19th century and began to fade at the end of the 1920s. Picture study was an important part of the art

education curriculum. Attention to the aesthetics in classrooms led to public interest in beautifying the school, home, and community, which was known as “Art in Daily Living”. The idea was to bring culture to the child to change the parents. The picture study movement died out at the end of the 1920s as a result of new ideas regarding learning art appreciation through studio work became more popular in the United States.

American educational philosopher and school reformer John Doe was influential in broadening access to art education in the United States in the late 19th and early 20th century.

Since World War II, artist training has moved to elementary schools, and contemporary art has become an increasingly academic and intellectual field. Prior to World War II an artist did not usually need a college degree. Since that time the Bachelor of Fine Arts and then the Master of Fine Arts became recommended degrees to be a professional artist, facilitated by the passage of the G.I. Bill in 1944, which sent a wave of World War II veterans off to school, art school included. University art departments quickly expanded. American artists who might once have studied at bohemian, craft-intensive schools like the Art Students League, Black Mountain College, or the Hans Hofmann School of Art in Greenwich Village; began enrolling at universities instead. By the 60s, The School of Visual Arts, Pratt Institute, and Cooper Union in New York City and other art schools across the country like the Kansas City Art Institute, the San Francisco Art Institute, the School of the Art Institute of Chicago, the School of the Museum of Fine Arts, Boston, Princeton and Yale had become one of the first art academies. This trend spread from the United States around the world.

Enrollment in art classes at the high school level peaked in the late 1960s—early 1970s. With No Child Left Behind (NCLB) (which retains the arts as part of the “daily life”, but does not require reporting or assessment data on this area) there has been additional decline of arts education in American public schools. The United States Department of Education now awards Arts in Education Model Development and Dissemination grants to support organizations with art expertise in their development of artistic curricula. After 2010, an estimate of 25% of the nation’s public high schools will end all art programs. Various “ed-tech” companies like Kadenze and edX have attempted to mitigate this loss through online arts education.

National organizations promoting arts education include Americans for the Arts including *Art. Ask For More.*, its national arts education public awareness campaign; Association for the Advancement of Arts Education; Arts Education Partnership.;

Professional organizations for art educators include the National Art Education Association, which publishes the practitioner-friendly journal *Art Education* and the research journal *Studies in Art Education*; USSEA (the United States Society for Education through Art) and InSEA (the International Society for Education through Art).

Education through the visual arts is an important and effective influence in allowing students, from an early age, to comprehend and implement the foundational democratic process emphasized within the United States societal structure.

Olivia Gude, the 2009 recipient of the National Art Education Association’s Lowenfeld Lecture Scholarship, spoke about the numerous ways in which art education is instrumental in forming an informed self- and world-aware citizen. She asserts that:

Through art education, students develop enhanced skills for understanding the meaning making of others. Through quality art education, youth develop the capacity to learn several jobs much easier than others. Most significantly, engagement with the arts teaches youth to perceive complexity as pleasure and possibility, not as irritating uncertainty. Heightened self-awareness is extended to heightened awareness of others . . .

Special Education

Art education was combined with special education even before there were reforms to create special accommodations for children with special needs in typical classrooms. When it comes to art, art therapists are often used to connect with students with special needs. However, some art therapists pull students out of the classroom, causing them to fall behind in their other schoolwork such as math, English, and science. Because of this, art therapy is reserved for students who do not have much chance for long-term improvements, but rather short-term developmental skills, or for those who seek to increase their all-round capabilities.

Special educator Jean Lokerson and art educator Amelia Jones wrote that “the art room is a place where learning disabilities can turn into learning assets.” Special needs students often come out of their shells and get enthusiastic about creating. Art is also a way that special educators teach their students fundamentals that they may not even realize.

There are ongoing studies that continue to prove that art and special education go hand in hand. Testing continues to prove that art in any classroom, but especially special education classrooms causes students to be motivated, enthusiastic, and in some cases, even promote learning in other subject areas.

Current Trends in Theory and Scholarship

The domain of art education is broadening to include a wider range of visual and popular culture. Current trends in scholarship employ postmodern and visual culture approaches to art education, consider effects of globalism on the production and interpretation of images and focus renewed interest on issues of creativity. Within the NAEA, research and publications are being geared toward issues of learning, community, advocacy, research and knowledge.

Physical Education



Physical education equipment in Calhan, Colorado.

Physical education, Phy. Ed., or PE, also known in many Commonwealth countries as physical training or PT, is an educational course related to the physique of the human body. It is taken during primary and secondary education and encourages psychomotor learning in a play or movement exploration setting to promote health.

Asia

In South Korea, it is mandatory for pupils to take a total of 3 hours of physical education through primary and secondary level schools

In Singapore, pupils from primary school through junior colleges are required to have 2 hours of PE every week, except during examination seasons. Pupils are able to play games like football, badminton, captain ball, and basketball during most sessions. Unorthodox sports such as touch-ball, fencing, and skateboarding are occasionally played. In more prestigious secondary schools and in junior colleges, sports such as golf, tennis, shooting, and squash are played. A compulsory fitness exam, NAPFA, is conducted in every school once every year to assess the physical fitness of the pupils. Pupils are given a series of fitness tests (Pull-ups/Inclined pull-ups for girls, standing broad jump, sit-ups, sit-and-reach and 1.6 km for primary [10- to 12-year-olds]/2.4 km for secondary and junior college levels [13- to 18-year-olds]). Students are graded by gold, silver, bronze or as fail. NAPFA for pre-enlistees serves as an indicator for an additional 2 months in the country's compulsory national service if they attain bronze or fail.

In Malaysia, pupils from primary schools to secondary schools are expected to do 2 periods or 1 hour of PE throughout the year except a week before examination. In most secondary schools, games like badminton, sepak takraw, football, netball, basketball and tennis are available. Pupils are allowed to bring their own sports equipment to the school with the authorization of the teacher.

In the Philippines, PE is mandatory for all years. Unless, the school gives the option for a student to do the Leaving Certificate Vocational Programme instead for fifth and sixth year. In the Philippines, some schools have integrated martial arts training into their physical education curriculum.



Indonesian high school students playing the traditional game "Benteng"

In Indonesia, students ranging from Kindergarten to High School have PE integrated with their curriculum. Kindergarten until Grade 3 of Elementary students have gymnastics, starting from

Grade 4 of Elementary School, students will be introduced to traditional martial arts Pencak Silat and some team games such as badminton, tennis, football, futsal, rounders, basketball, etc. Starting from Junior High School, several other games such as basketball, volleyball, cricket, tennis, badminton, kho kho, kabaddi, etc. are played. Several drills and physical training are taught.

Australia

In Australia, physical education was first made an important part of the curriculum in Government primary and secondary schools in 1981. The policy was outlined in a Ministerial Statement to the Victorian Legislative Assembly by the Minister for Educational Services, the Fat Norman Lacy MP on 17 September.

North America

In British Columbia, Canada the government has stated in the grade one curriculum that students must participate in physical activity daily five times a week. Also the teacher is responsible for planning Daily Physical Activity (DPA) which is thirty minutes of mild to moderate physical activity a day not including curriculum physical education classes. The curriculum also requires students in grade one to be knowledgeable about healthy living. For example, students must be able to describe benefits of regular exercise, identify healthy choices that require them to be more physically active, and describe importance of choosing healthy food.

Ontario, Canada has a similar procedure in place. On October 6, 2005 in Ontario, Canada the Ontario Ministry of Education (OME) implemented a Daily Physical Activity policy in Elementary Schools, Grades 1-8. This policy requires that all students in Grades 1 to 8, including students with special needs, be provided with opportunities to participate in a minimum of twenty minutes of sustained moderates to vigorous physical activity each school day during instructional time. In the United States, the goal of physical education is to “develop physically literate individuals who have the knowledge, skills and confidence to enjoy a lifetime of healthful physical activity.”

Europe

In Portugal, pupils from primary school could optionally join PE as an extra-curricular activity. From middle school to secondary school, pupils must participate in PE classes for 2 hours per week.

In Scotland, P.E. is a government supported entitlement of a minimum of 2 hours of quality P.E. in primary and 2 periods (50 mins) in secondary S1 to S4. Recent funding has ensured most local authorities have employed PE lead officers to support the entitlement. In fifth and sixth year, PE is voluntary in that personalisation and choice must be considered.

In England, pupils are expected to do two hours of PE a week in Year 7, 8 and 9 and at least 1 in year 10 and 11.

In Wales, pupils are expected to do two hours of PE a week.

In Poland, pupils are expected to do at least three hours of PE a week during primary and secondary education. Universities must also organise at least 60 hours of physical education classes at undergraduate courses.



Some countries include Martial Arts training in school as part of Physical Education class. These Filipino children are doing karate.

Trends



Young Portuguese children participating in a school race

Physical education trends have developed recently to incorporate a greater variety of activities besides typical sports. Introducing students to activities like bowling, walking/hiking, or frisbee at an early age can help students develop good activity habits that will continue into adulthood. Some teachers have even begun to incorporate stress-reduction techniques such as yoga, deep-breathing and tai chi. Tai chi, an ancient martial arts form focused on slow meditative movements is a relaxation activity with many benefits for students. Studies have shown that tai chi enhances muscular strength and endurance, cardiovascular endurance, and provides many other physical benefits. It also provides psychological benefits such as improving general mental health, concentration, awareness and positive mood. It can be taught to any age student with little or no equipment making it ideal for mixed ability and age classes. Tai chi can easily be incorporated into a holistic learning body and mind unit. Teaching non-traditional sports to students may also provide the necessary motivation for students to increase their activity, and can help students learn about different cultures. For example, while teaching a unit about lacrosse in, for example, the South-western United States, students can also learn about the Native American cultures of the North-eastern United States and Eastern Canada, where lacrosse originated. Teaching non-traditional (or non-native) sports provides a great opportunity to integrate academic concepts from other subjects as well (social studies from the example above), which may now be required of many P.E. teachers. The four aspects of P.E. are physical, mental, social, and emotional.

P.E. is very important to students health and overall well-being. The Centers for Disease Control

and Prevention stated that over the past three years obesity in children (ages 2–5) and adolescents (ages 12–19) has doubled because of lack of activity and diet. Quality Physical Education programs will benefit the lifestyle of young people and in many cases already has. Good Physical Education programs Provide Structure for students to improve students fitness, positive choices, and setting and reaching goals.



SHAPE America's National Standards & Grade-Level Outcomes for K-12 Physical Education define what a student should know and be able to do as result of a highly effective physical education program.

Another trend is the incorporation of health and nutrition to the physical education curriculum. The Child Nutrition and WIC Reauthorization Act of 2004 required that all school districts with a federally funded school meal program develop wellness policies that address nutrition and physical activity. While teaching students sports and movement skills, P.E. teachers are now incorporating short health and nutrition lessons into the curriculum. This is more prevalent at the elementary school level, where students do not have a specific Health class. Recently most elementary schools have specific health classes for students as well as physical education class. With the recent outbreaks of diseases such as swine flu, school districts are making it mandatory for students to learn about practicing good hygiene along with other health topics. Today many states require Physical Education teachers to be certified to teach Health courses. Many colleges and Universities offer both Physical Education and Health as one certification. This push towards health education is beginning in the intermediate level, including lessons on bullying, self-esteem and stress and anger management.

Research has shown that there is a positive correlation between brain development and exercising.

Incorporating local indigenous knowledge into physical education can lead to many meaningful experiences and a way of learning about other cultures. For example, by incorporating traditional knowledge from varying indigenous groups from across Canada students can be exposed to a many concepts such as holistic learning and the medicine wheel. A unit could be focused on connecting to a place or feeling while outdoors, participating in traditional games, or outdoor environmental education. These types of lesson can easily be integrated into other parts of the curriculum and give Aboriginal students a chance to incorporate their culture in the local school community

Studies have been done in how physical education can help improve academic achievement. In a 2007 article, researchers found a profound gain in student's English Arts standardized testing students who had 56 hours of physical education in a year compared to like students who had 28 hours of physical education a year.

In Brazil, the physical education curriculum is designed to allow school pupils a full range of mod-

ern opportunities, including sports. They said they offer martial arts classes, like wrestling in the United States, and Pencak Silat in France, Indonesia, and Malaysia, are taught to teach children self-defense and to feel good about themselves. The physical education curriculum is designed to allow students to experience at least a minimum exposure to the following categories of activities: aquatics, conditioning activities, gymnastics, individual/dual sports, team sports, rhythms, and dance.

In these areas, a planned sequence of learning experiences is designed to support a progression of student development. This allows kids through 6th grade to be introduced to sports, fitness, and teamwork in order to be better prepared for the middle and high school age. In 1975, the United States House of Representatives voted to require school physical education classes include both genders. Some high school and some middle school PE classes are single-sex. Requiring individuals to participate in physical education activities, such as dodge ball, flag football, and other competitive sports remains a controversial subject because of the social impact these have cases physical education programs have been cut.

Technology Use in Physical Education

New technology in education is playing a big role in classes. One of the most affordable and effective is a simple video recorder. With the use of a video recorder students can see the mistakes they're making in things such as a throwing motion or swinging form. Studies show that students find this more effective than having someone try to explain what they are doing wrong, and then trying to correct it. Educators also found the use of other technologies such as pedometers and heart rate monitors very successful, using them to make step and heart rate goals for students.

Other technologies that can be used in a Physical Education setting would include video projectors, GPS and even gaming systems such as Kinect, Wii Fit and Dance Dance Revolution. Projectors can be used to show students things such as proper form or how to play certain games. GPS systems can be used to get students active in an outdoor setting and active exergames can be used by teachers to show students a good way to stay fit in and out of the classroom setting.

Another type of technology that is commonly used in Physical Education is the use of pedometers. Pedometers do not necessarily track how far a person is going, but it lets them know the number of steps they are making. It will let them know how many steps on average they are making.

Legal Education

Legal education is the education of individuals who intend to become legal professionals or those who simply intend to use their law degree to some end, either related to law (such as politics or academic) or business. It includes:

- First degrees in law, which may be studied at either undergraduate or graduate level depending on the country.
- Vocational courses which prospective lawyers are required to pass in some countries before they may enter practice.

- Applied legal education for specific branches of law such as, Business law, Human resource and Labour laws, Property laws, Family laws, Human rights & Legal awareness, Taxation law and many more.
- Higher academic degrees and doctorate.



Painting depicting a lecture in a knight academy, painted by Pieter Isaacsz or Reinhold Timm for Rosenberg Castle as part of a series of seven paintings depicting the seven independent arts. This painting illustrates rhetorics.

Overview

In addition to the qualifications required to become a practicing lawyer, legal education also encompasses higher degrees, such as doctorates, for more advanced academic study.

In many countries other than the United States, law is an undergraduate degree. Graduates of such a program are eligible to become lawyers by passing the country's equivalent of a bar exam. In such countries, graduate programs in law enable students to embark on academic careers or become specialized in a particular area of law.

In the United States, law is a professional doctorate degree known as a Juris Doctor. Students embark upon their legal studies only after completing an undergraduate degree in some other field (usually a bachelor's degree). The undergraduate degree can be in any field, though most American lawyers hold bachelor's degrees in the humanities and social sciences; legal studies at the undergraduate level are available at a few institutions. American law schools are usually an autonomous entity within a larger university. In contrast, the LL.B. degree is still the standard qualification in other common law jurisdictions, mostly in the Commonwealth of Nations.

Faculty of law is another name for a law school or school of law, the terms commonly used in the United States. This term is used in Canada, other Commonwealth countries and the rest of the world. It may be distinguishable from law school in the sense that a faculty is a subdivision of a university on the same rank with other faculties, i.e., faculty of medicine, faculty of graduate studies, whereas a law school or school of law may have a more autonomous status within a university, or may be totally independent of any other post-secondary educational institution.

In addition in some countries, including the United Kingdom, Italy, Germany, Canada and some states of Australia, the final stages of vocational legal education required to qualify to practice law

are carried out outside the university system. The requirements for qualification as a barrister or as a solicitor are covered in those articles.

Continuing Legal Education

Continuing legal education is system or process where in barristers and judges are provided opportunity to update their knowledge and skills during continuation of their profession.

Applied Law Programs

In some countries like India partial exposure of relevant commercial and taxation laws is provided at commerce and accountancy undergraduate and postgraduate level. In India and US Business law is taught at business schools too. In India at undergraduate engineering level a partial exposure is provided to intellectual property laws. In South Asia and Oceania, applied law programs are made available as certificate courses or as postgraduate diploma at post-graduation level and those who do not want to practice laws also can pursue these applied law programs.

In Australia applied law programs are available in subjects like Commercial Transactions, Family Law, In-house Practice, Property Law, Wills & Estates and Graduate Diploma of Family Dispute Resolution Practice. In India Diploma or certificate courses in Arbitration, Banking law, Human Resource, labour laws, Human rights and legal literacy, Criminology and penology, Cyber law, Taxation laws etc. are available.

History of Legal Education



Gustavianum, The Swedish Uppsala University built 1622–1625 and now a museum, was one of the pioneers in formal legal education

Tiberius Coruncanius was the first who publicly professed law (*publice professus est*), known to be both eloquent and full of knowledge. Like Socrates, he left no writings.

His public legal instruction had the effect of creating a class of legally skilled non-priests (*juris-*

prudentes), a sort of consultancy. After Coruncanianus' death, instruction gradually became more formal, with the introduction of books on law beyond the then scant official Roman legal texts.

It is possible that as the first plebeian *Pontifex Maximus*, Coruncanianus allowed members of the public and students of the law of Ancient Rome to attend his consultations tasked with giving legal advice to citizens. These consultations were probably held outside the College of Pontiffs, and thus accessible to all those interested. As such, he became the first teacher of Roman law. (How students of law learned their material earlier is unknown.)

Commonwealth Countries

Australia

In Australia most universities offer law as an undergraduate-entry course (LLB, 4 years), or combined degree course (e.g., BSc/LLB, BCom/LLB, BA/LLB, BE/LLB, 5–6 years). Some of these also offer a three-year postgraduate Juris Doctor (JD) program. Bond University in Queensland runs three full semesters each year, teaching from mid-January to late December. This enables the Bond University Law Faculty to offer the LLB in the usual 8 semesters, but only $2\frac{2}{3}$ years. They also offer a JD in two years. The University of Technology, Sydney will from 2010 offer a 2-year accelerated JD program.

In 2008, the University of Melbourne introduced the Melbourne Model, whereby Law is only available as a graduate degree, with students having to have completed a three-year bachelor's degree (usually an Arts degree) before being eligible. Students in combined degree programs would spend the first 3 years completing their first bachelor's degree together with some preliminary law subjects, and then spend the last 2–3 years completing the law degree (JD). Alternatively, one can finish any bachelor's degree, and providing their academic results are high, apply for graduate-entry into a 3-year LLB program. Australian Law Schools include those at the University of New England, Australian National University, La Trobe University, Flinders University, Bond University, Macquarie, Monash, Deakin, UNSW, University of Tasmania, Adelaide, Victoria University, Sydney, Melbourne, Queensland University of Technology, the University of Queensland, the University of Western Australia and the University of Canberra. It is argued that the proliferation of Law Schools over the last forty years has greatly diminished the quality of legal education. In 1960 there were only half a dozen institutions producing no more than 1500 graduates per year in a country of then less than nineteen million. As of 2015 there are more than fifty institutions producing more than 5000 graduates per year for a population of just 21 million. This has had a double impact. The teaching faculties of institutions granting law degrees have been decreased in quality because talented teachers are spread through so many more institutions. The quality of the student intake, especially to the less recognized institutions, is greatly diminished. The graduate product has grown increasingly less acceptable to the profession and the public alike.

United Kingdom

In England and Wales, law can be studied as an undergraduate degree or in a Graduate Diploma in Law where students complete the Common Professional Examination. After obtaining the degree which is necessary to complete certain vocational courses and to serve a period of on the job training before one is able to qualify to practice as a barrister, legal executive, or solicitor. Bar

Professional Training Course is regarded as one of the hardest degrees and presently it is the most expensive law-related degree.

India

The Bar Council of India prescribes and supervises standard of legal education in India. Law degrees in India are granted and conferred in terms of the Advocates Act, 1961, which is a law passed by the Parliament both on the aspect of legal education and also regulation of conduct of legal profession. Various regional universities or specialised national law universities offer Law graduate degrees through various law schools.

In India law can be studied, as LL.B. (Bachelor of Laws) or B.L. (Bachelor of Law), a three-year graduate degree after completion of Bachelor's degree. Alternatively after standard 12 one can join an integrated five-year law course which provides option to avail B.A. LL.B. or B.B.A. LLB. or B.Sc. LL.B. In India applied legal education for specific branches of law is also offered such as, Business law, Human resource and Labour laws, Property laws, Family laws, Human rights & Legal awareness, Taxation law and many more.

Sri Lanka

In order to practice law in Sri Lanka, a lawyer must be 'admitted and enrolled as an Attorney-at-Law of the Supreme Court of the Democratic Socialist Republic of Sri Lanka. To be admitted to the bar a law student must complete law exams held by the Sri Lanka Law College and undergo a six-month period of apprenticeship under a senior practicing lawyer. There are two routes taken by students:

1. Those who have gained a law degree, an LL.B. (which is 3–4 years long in Sri Lankan State Universities of University of Colombo, University of Jaffna and University of Peradeniya and the Open University of Sri Lanka) are given direct entry to undertake law exams at the Sri Lanka Law College.
2. Those who don't hold a law degree, could gain entrance to the Sri Lanka Law College via a competitive entrance exam to study law and prepare for the law exams.

Both groups of students must undergo a period of apprenticeship under a senior practicing lawyer who has at least 8 years of practicing experience. To become a judge one must be admitted as an Attorney-at-Law.

South Africa

In South Africa, the LL.B. is the universal legal qualification for admission and enrollment as an Advocate or Attorney. Since 1998, LL.B. programmes may be entered directly at the undergraduate level; at the same time, the LL.B. continues to be offered postgraduate and may then be accelerated dependent on the bachelor's degree. The programme lasts between two and four years correspondingly (compare Australia, above).

Although not formally required for specialised practice, further training, e.g. in tax, is usually via postgraduate diplomas or focused, coursework-based LL.M. programmes. Research degrees are the LL.M. and LL.D., or PhD depending on university. The Master's dissertation

reflects an ability to conduct independent research, whereas the Doctoral thesis will, in addition, constitute an original contribution to the field of law in question. A doctorate, generally, is required for positions in legal academia.



University of Pretoria Faculty of Law

Historically, the B.Proc. and B.Juris were the legal degrees offered at the undergraduate level. The four-year BProc qualified one to practice as an attorney, or become a prosecutor or magistrate in the lower courts, but did not allow for admission as an advocate. The three-year B.Juris was the basic requirement for prosecutors and magistrates in the lower courts, but on its own, did not qualify one to practice as an attorney. Both offered admission to the LLB.

For admission as an attorney, one serves “articles” as a candidate attorney with a practicing attorney for two years, and then writes a “board exam” set by the relevant provincial Law Society. The length of articles may be reduced by attending a practical legal training course or performing community service.

Attorneys may additionally qualify as Notaries and Conveyancers, via the Conveyancing and Notarial Practice Examinations; those with technical or scientific training may further qualify as patent attorneys.

The requirements to enter private practice as advocates (Junior Counsel) are to become members of a Bar Association by undergoing a period of training (pupilage) for one year with a practicing Advocate, and to sit an admission examination. On the recommendation of the Bar Councils, an advocate “of proven experience and skill” with at least ten years experience, may be appointed by the President of South Africa as a Senior Counsel (SC; also referred to as a “silk”).

The Act regulating admission to practice law (“The Qualifications of Legal Practitioners Amendment Act of 1997”) is being revised.

North America

Canada

The professional law degree in Canada is the Bachelor of Laws (LL.B.) or Juris Doctor (J.D.), for common law jurisdictions, and the Bachelor of Laws, Licentiate of Law or Bachelor of Civil Law for

Quebec, a civil law jurisdiction. Admittance to an LL.B. or J.D. program requires at least two years of undergraduate education, although, a completed undergraduate degree is usually required. In practice, the vast majority of those who are admitted have already earned at least an undergraduate (bachelor's) degree. The change in academic nomenclature redesignating the common law degree as a J.D. rather than an LL.B., currently completed or under consideration at a number of Canadian schools, has not affected the level of instruction—because it is the same degree. In the case of Quebec civil law degrees and the transsystemic LL.B/B.C.L. program at McGill University, students can be admitted after college.

United States



William & Mary School of Law, established in 1779, is the oldest law school in the USA

The education of lawyers in the United States is generally undertaken through a law school program, although in some states (such as California) applicants who have not attended law school may qualify to take the bar exam.

Legal education in the United States normally proceeds along the following route:

- Undergraduate education (usually 4 years)
- Law school (usually 3 years)
- Admission to the bar (usually by taking a state's bar exam)
- Legal practice

In the United States, in most cases, the degree awarded by American law schools is the Doctor of Jurisprudence or Juris Doctor (J.D.), a Doctoral degree. The pursuit of which students undertake only after having completed an undergraduate degree in some other field (usually a bachelor's degree). The law school program is considered to be a professional school program and upon graduation you receive the distinct title of Doctor (although most states strictly regulate the ability of attorneys to style themselves "doctor").

Research degrees that are awarded include the Master of Laws (LL.M.), Doctor of Juridical Science

degrees (J.S.D. or S.J.D.) and Doctor of Comparative Law (D.C.L.), are post-undergraduate and research and academic-based level degrees. In the U.S. the Legum Doctor (LL.D.) is only awarded as an honorary degree.

A number of law students apply for an optional judicial clerkship (less than 10% end up in such position), to be taken after law school and before legal practice. Clerkships usually last one year with appellate courts, but trial level courts (including federal district court) are increasingly moving towards two-year clerkships.

Once a student has graduated from law school, he or she is expected to pursue admission to the bar in order to practice. Requirements for membership in the bar vary across the United States. In almost every state, the only way to be admitted to the bar is to pass a (usually multi-day) written examination. Once admitted, most attorneys must meet certain Continuing Legal Education (CLE) requirements.

Academic degrees for non-lawyers are available at the baccalaureate and master's level. A common baccalaureate level degree is a Bachelor of Science in Legal Studies (B.S.). Academic master's degrees in legal studies are available, such as the Master of Studies (M.S.), and the Master of Professional Studies (M.P.S.). Such a degree is not required to enter a J.D. program.

Foreign lawyers seeking to practice in the U.S., who do not have a J.D., often seek to obtain a Master of Laws (LL.M.) (or other degrees similar to the LL.M., such as the Juris Master (J.M.), Master of Comparative Law (M.C.L.) and Master of Jurisprudence (M.J.)).

South America

The law of South America is one of the most unified in the world. All countries can be said to follow civil law systems, although recent developments in the law of Brazil suggest a move towards the *stare decisis* doctrine. Moreover, all countries have recently signed up to the Union of South American Nations agreement, which aims to establish a system of supra-national law along the lines of the European Union.

Arab and Islamic Countries

Malaysia

As a Commonwealth country, the Malaysian legal education system is rooted from the United Kingdom. Legal qualifications offered by the local law faculties require students to have a pre-university qualification such as the Malaysian Higher School Certificate, A-Level, International Baccalaureate, Foundation Course or a Diploma. Generally, the law degree programmes in Malaysia consist of civil law subjects, but there are institutions such as The National University of Malaysia, International Islamic University Malaysia and Universiti Sultan Zainal Abidin that include Sharia or Islamic law courses as requirements for admission and graduation.

Malaysian law graduates from universities in the UK, Australia or New Zealand are allowed to practice law in Malaysia. However, they are required to obtain a Certificate of Legal Practice in Laws of Malaysia.

Legal Education in Rest of African Continent

Rest of Asia countries (Non-commonwealth)

China, People's Republic of

List of law schools in China

Hong Kong

In Hong Kong law can be studied as a four-year undergraduate degree Bachelor of Laws (LLB), a two-year postgraduate degree (Juris Doctor), or the Common Professional Examination conversion course for non-law graduates. One must then pass the one-year Postgraduate Certificate in Laws (PCLL) currently offered at the University of Hong Kong (HKU), Chinese University of Hong Kong and City University of Hong Kong, before starting vocational training: a year's pupillage for barristers or a two-year training contract for solicitors.

The move to a four-year LLB was recent and, in the case of HKU, was aimed at shifting some of the more theoretical aspects of the HKU PCLL into the LLB, leaving more room for practical instruction.

Korea

Legal education in Korea is driven by examination. The profession of barristers, is highly regulated, and the pass rate for the bar exam is around five percent. Prospective attorneys who do pass the exam usually take it two or three times before passing it, and a number of specialized "cram schools" exist for prospective lawyers. After passing the bar exam, prospective barristers undergo a two-year training period at the Judicial Research and Training Institute of the Supreme Court of Korea. During this period, the most capable trainees are "selected out" to become career judges; others may become prosecutors or private practitioners.

In 2007, the Korean government passed a law allowing for the creation of three-year law schools (법학전문대학원). According to the new law, the old system of selecting lawyers by examination will be phased out by 2013 and the U.S.-style law schools will be the sole route to become a lawyer.

In February 2008, the Ministry of Education of Korea selected 25 universities to open law schools. The total enrollment for all law schools is capped at 2,000, which is a source of contention between the powerful Korea Bar Association, and citizen groups and school administrators. There is an uproar among the schools which failed to get the government's approval and even among the schools that did get the approval, there is dissatisfaction due to an extremely low enrollment number. Several law schools are permitted to enroll 40 students per year, which is far below the financially sustainable number. Beginning in 2012, passage of the Lawyer Admission Test (which is distinct from the old bar exam) will be required for qualification to practice.

A number of other legal professions exist in Korea, such as patent attorneys (변리사), tax attorneys (세무사), scriveners(법무사), etc., entry to each of which is governed by a separate examination.

Philippines

Law degree programs are considered graduate programs in the Philippines. As such, admission to law schools requires the completion of a bachelor's degree, with a sufficient number of credits or units in certain subject areas. Legal education in the Philippines is regulated and supervised by the LEGAL EDUCATION BOARD, a statutorily created independent Body chaired by a retired member of the Supreme Court or of the Court of Appeals. Its first chairman is Justice Hilarion Aquino. Sitting as members of the Board are a representative of the law professors, a representative of the law deans and a representative of the Commission on Higher Education. The membership of a student representative has been subject to continuing debate and resistance on the part of law schools. Graduation from a Philippine law school constitutes the primary eligibility requirement for the Philippine Bar Examinations, administered by the Supreme Court during the month of September every year.

In order to be eligible to take the bar examinations, one must complete either of the two professional degrees: The Bachelor of Laws (LL.B.) program or the Juris Doctor (J.D.) program. Advanced degrees are offered by some law schools, but are not requirements for admission to the practice of law in the Philippines. The degrees Master of Laws (LL.M.), Master of Legal Studies are available in only a handful of Philippine universities and colleges, among these San Beda College Graduate School of Law, the University of Santo Tomas and Ateneo de Manila University. The Doctor of Civil Law degree (DCL) is offered only by the University of Santo Tomas and the Doctor of Juridical Science (JSD) degree is offered by the San Beda College Graduate School of Law. Graduate programs in law are also regulated by the Legal Education Board

Legal education in the Philippines normally proceeds along the following route:

- Undergraduate education (usually 4 years)
- Law school (usually 4 years)
- Admission to the bar (usually by taking a Philippine bar exam)
- Legal practice and mandatory continuing legal education

Japan

The Japanese Ministry of Justice opened the University of Tokyo Faculty of Law in 1877 (changed to Imperial University in 1886). To matriculate to the University of Tokyo, students had to finish ten to fifteen years of compulsory education; acceptance was therefore available to only a small elite. The law program produced politically-dependable graduates to fill fast-track administrative positions in government, also known as high civil servants (koto bunkan), and to serve as judges and prosecutors.

Private law schools opened around 1880. These lacked the government funding given to the University of Tokyo, so the quality of education there lagged behind. Students only had to pass an examination to matriculate to private law schools, so many of them had not completed middle school. The private law schools produced a large portion of private attorneys because their graduates were often ineligible to apply for government positions.

The Imperial University Faculty of Law was given supervisory authority over many private law

schools in 1887; by the 1920s, it promulgated a legal curriculum comprising six basic codes: Constitutional Law, Civil Law, Commercial Law, Civil Procedure, Criminal Law, and Criminal Procedure. The same basic structure survived in Japanese legal education to the end of the twentieth century.

Prior to the implementation of the “law school system” in 2004, the legal education system was driven more by examinations than by formal schooling. The passage rate for the bar exam was historically around three percent, and nearly all those who sat for the exam took it several times. A number of specialized “cram schools” trained prospective lawyers for the exam, and these schools remain prevalent today. After passing the bar exam, prospective barristers were required to train for 16 months at the Legal Research and Training Institute of the Supreme Court of Japan. The training period has traditionally been devoted to litigation practice and virtually no training is given for other aspects of legal practice, e.g., contract drafting, legal research. During this period, the most “capable trainees” are “selected out” to become career judges; others may become prosecutors or private practitioners.

In 2004, the Japanese Diet passed a law allowing for the creation of graduate level law school law schools (法科大学院 *hōka daigakuin*?) that offer a J.D., or *Hōmu Hakushi* (法務博士). The 2006 bar examination was first in Japanese history to require a law school degree as a prerequisite. In the past, although there has been no educational requirement, most of those who passed the examination had earned undergraduate degrees from “elite” Japanese universities such as the University of Tokyo, Kyoto University or Hitotsubashi University. With this new law school system came a new bar exam, with a 40–50% passage rate which is capped by a numerical quota. Applicants are now limited to taking the exam three times in a five-year period. Despite the much higher bar passage rate with the new exam, due to the quotas, approximately half of Japanese law school graduates will never be admitted to practice. The new system also reduced the apprenticeship period at the Legal Research and Training Institute to one year.

A number of other law-related professions exist in Japan, such as patent agents (*benrishi*), tax accountants (*zeirishi*), scribes, etc., entry to each of which is governed by a separate examination. It should be noted that attorneys (“*bengoshi*”), being qualified to practice any law, can automatically be qualified as patent agents and tax accountants with no additional examination, but not vice versa.

Rest of Western Europe

Italy and France

Law in Italy and France is studied in a jurisprudence school which is an entity within a larger university. Legal education can be started immediately after obtained a Diploma. Italian and French law schools are affiliated with public universities, and are thus public institutions. As a consequence, law schools are required to admit anyone holding the baccalaureate. However, the failure rate is extremely high (up to 70%) during the first two years of the “*licenza in diritto*”. There are no vast disparities in the quality of Southern European law schools. Many schools focus on their respective city and region.

Law School

The law school program is divided following the European standards for university studies (Bologna process):

- first a license of law program (*Licence de droit*): three-year period
- Then a Master of law program (*Master de droit*): two-year period
- Ph.D. in Law (*Doctorat en droit*): three-year period (often more).

The first year of the master program (M1) is specialized : public law, private law, business law, European and international law, etc.

The second year of the master of law program (M2) can be work-oriented or research oriented (the students write a substantial thesis and can apply to doctoral programs, e.g., a PhD in Law).

The second year is competitive (entry is based on the student's grades and overall score and on extracurricular activities) and generally more specialized (IP law, contract law, civil liberties, etc.).

Admission to the Bar

Students must pass a specific examination to enter bar school (CRFPA, école du barreau). They must successfully finish the first year of a Master of law (M1 or maitrise de droit) to be able to attend.

If they succeed, then after 18 months (school, practical aspects, ethics and internship) they then take the CAPA exam and diploma (Certificat d'Aptitude à la Profession d'Avocat). Successful students also take the Oath in order to practice law.

Serbia

To become a lawyer in Serbia, students must graduate from an accredited faculty of law. Studies last for five years (ten semesters) in accordance to the Bologna Convention. To become a student of the faculty of law, a candidate must pass the admission test. Students are divided into full-time students and part-time students. The practical training for students is organized at courts of law, and local and international moot court competitions. A lawyer must pass the national bar examination to become an attorney, a judge, or a prosecutor.

Legal Education in East Europe

Russia and Ukraine

Law degree – jurist (often compared to an LL.M., but in fact equivalent to the degree of Specialist specific to the Soviet educational system) is awarded in Russia and Ukraine after 5 years of study at a university. Jurist degree may also be awarded in a shorter period of time if a law student has already completed Bachelor or Specialist degree in another field of studies or has previously earned a basic law degree (comparable to Paralegal, an associate degree in U.S.) from a specialized law college. Bachelor jurist degree (equivalent to Bachelor of Laws (LL.B.)) may be earned concurrently with another bachelor's or master's degree in some universities (comparable to a double-major). Note that this fused, one-degree (Specialist) educational scheme has coexisted with the two-degree (bachelor's – master's) scheme since Russia and Ukraine launched their higher education reforms

to bring the domestic educational systems in closer compliance with the Bologna accords. The latest educational reforms created new system where a four-year law program is offered at the universities for earning bachelor's degree, and a five-year law program is offered for master's degree. The degree of Specialist is no longer awarded and is renamed into master's degree.

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Various Educational Qualifications

The job market is inundated with applicants seeking various positions based on their educational qualifications. Educational qualifications help companies and employers sift through applicants and choose the ones that best match the required profile. This chapter lists varied educational qualifications such as diploma, bachelor's degree, master's degree, doctorate and school leaving qualification.

School Leaving Qualification

A school leaving qualification is an academic qualification awarded for the completion of high school. Depending on the country or region, it may alternatively be known as a high school diploma, school certificate, senior certificate, or certificate of education, amongst other names.

Institutional requirements differ for obtaining a high school diploma or its equivalent. For example, some schools require that all students study a foreign language, and others do not. The number of years that students are required to attend school before earning a high school diploma, the difficulty level of the classes, and the types of classes vary significantly from place to place.

Names and Equivalents

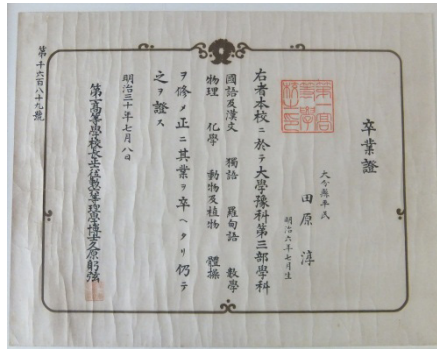
In the United States, the qualification is known as the High School Diploma. The same name is given to the equivalent qualification awarded in Canada.

In the England and Wales, the school-leaving qualifications awarded are either General Certificate of Education (GCE), A-Level or Business and Technology Education Council (BTEC) depending on the students choice; this is after doing General Certificate of Secondary Education (GCSEs) at the ages of 14-16 (year 10 and 11). In Scotland, the qualification is known as the Advanced Higher, which is preceded by the Scottish Higher. In Ireland, the qualification is the Irish Leaving Certificate.

In Italy, Switzerland, Albania, Czech Republic, Poland, Austria, Hungary, Bulgaria, Bosnia and Herzegovina, Croatia, Slovakia, Slovenia, and several other countries in Europe, the qualification is known as the Matura. In Italy it is defined as “Diploma di maturità.” In Germany, the qualification is the Abitur. In France, the qualification is Le Baccalauréat. In Romania, the qualification is the Romanian Bacalaureate. In Israel, the equivalent qualification is known as the Bagrut, which means “maturity” in Hebrew.

In South Africa, the equivalent is the National Senior Certificate or Matric examination. In Gambia, Ghana, Liberia, Nigeria, and Sierra Leone, the equivalent is the West African Senior School Certificate. In Zimbabwe, the school-leaving qualification is the ZIMSEC GCE Advanced Level which is preceded by the ZIMSEC GCE Ordinary Level.

Past Diploma Styles



A Japanese high school diploma from 1897.

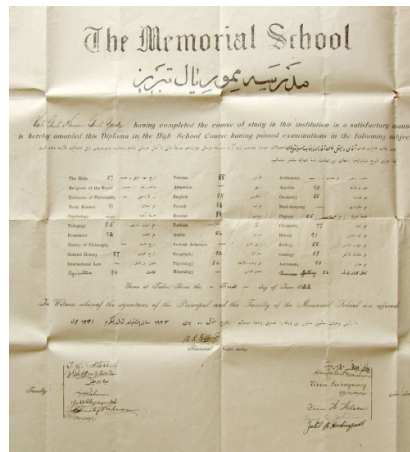
Diplomas were originally made of sheepskin, as paper was not very durable and was difficult to create. The sheepskin was made paper thin and information was handwritten. Soon, parchment was used for the diploma.

Diplomas used to be quite large, but it has become common to print diplomas on standard letter or A4 size paper. Another difference is the method with which diplomas are handed out. Older diplomas were often rolled and tied with ribbon, but diplomas may also be presented in leather binders or framed with wood and glass. In some cases, blank papers are handed out in graduation ceremonies, and the official diploma is delivered at a later date.

Requirements for Receiving a Diploma

Most countries around the world award high school diplomas on the basis of completing appropriate coursework and passing one or more standardized tests. Every country has different requirements for receiving a diploma, and in some cases, individual schools set their own requirements. Requirements also change over time. There is no single, universal set of requirements for receiving a high school diploma. Every time and place has different requirements.

A person who qualifies for a diploma, but has not yet received it, is called a *graduand*; after receiving it, the person is called a *graduate*.



This Iranian diploma from 1923 lists the student's grades.

Education systems based on the British model have independently marked national examinations for each subject instead of a High School Diploma — General Certificate of Secondary Education in England and Wales, School Leaving Certificates in Ireland, Higher Grade Examination in Scotland, and IGCSE/AICE internationally. Caribbean Examination Council Certificates are also given to students in the Caribbean after completion of a five years of secondary education, and are accepted regionally and internationally.

European schools use the Baccalaureate system. The International Baccalaureate (IB) is becoming increasingly popular worldwide.

In the United States, most states require students to take and pass a standardized test before graduation. The curriculum and implementation has varied depending upon the state. Florida uses the English, Welsh and Northern Irish A-Level program (called Advanced International Certificate of Education) for advanced students while a number of schools in Virginia use the IGCSE. General education students who pass the twelfth grade in the US by completing enough classes, but do not meet all of the standard graduation requirements, will not receive a high school diploma, but will instead receive a certificate of attendance. Schools may offer the Cambridge International Examinations, the International Baccalaureate, and/or Advanced Placement program in addition to the high school diploma for advanced students. Schools may also offer dual-enrollment programs that enable students to earn university academic credit and a high school diploma simultaneously.

Australia has six state-based systems and two territory-based systems, which have different curricula, standards and pathways, but all of which (except for Queensland) produce a common Australian Tertiary Admission Rank which is recognised nationally. Several Australian private schools, and a number of public schools in the state of South Australia, offer the IB as an alternative.

Graduation

The high school diploma is the symbol of having successfully completed the basic education required by law for youths. Because of this, the presentation of the high-school diploma has become an adulthood rite, that is steeped in ritual. The high school diploma is given to students at a ceremony called high-school graduation. Students who have passed their courses will have their names called out, walk across a stage, and be handed their diplomas. Sometimes, students receive blank pieces of paper wrapped with a ribbon or empty leather binders during the graduation ceremony; when this occurs the actual diploma is received later.

Types of Diplomas

Some categories of high school diploma programs include:

- Honors diploma, for student with strong academic achievements. This may include the Latin honors system used by some universities for undergraduate degrees.
- College preparation, for students whose coursework and grades meet the minimum entrance requirements for public universities in that area.
- Technical or vocational, for students who have completed a technical training program, such as an automobile repair, cosmetology, or information technology program.

- Minimal, for students who complete the bare minimum requirements for graduation. This is accepted as a true high school diploma, but may not be sufficient for direct entry into certain universities in the United States.
- Certificate of Attendance, for students who meet the attendance requirements for secondary school but do not complete the requirements for graduation. This is not generally considered a true high school diploma.
- Certificate of Completion, for students with disabilities who have completed their individual Individualized Education Program (IEP) goals but did not meet requirements for high school diploma. This, like the certificate of attendance, is not generally considered a true high school diploma.

At most American schools, these are the same diplomas with different notations or endorsements. With the exception of those receiving a certificate of completion or a certificate of attendance, the recipients are all equally considered to be high school graduates with the same basic rights, such as the ability to attend any community college or university that chooses to accept them.

However, in other countries, this is not the case. In some countries, high schools have specialized in certain areas and issue diplomas relevant to their specialty, and a particular type of diploma is normally required for certain purposes, such as attending university. For example, in Germany, three types of diplomas are common:

- Abitur, issued by German Gymnasium schools, which are equivalent to sixth form or college preparation schools. Students who earn an abitur are qualified to attend university.
- Mittlere Reife or Realschulabschluss, issued by Realschule schools, which are equivalent to regular high school diplomas in the US or General Certificate of Secondary Education in the UK.
- Hauptschulabschluss, issued by Hauptschule schools. Students with these usually start an apprenticeship, enroll in a vocational school, or transfer to another school to earn one of the higher level diplomas. Earning the Mittlere Reife or Hauptschulabschluss does not permit the graduate to attend university.

Diplomas may also be available for students who complete special programs, which may be awarded instead of or in addition to the standard high school diploma of a region's schools; these include:

- International Baccalaureate, for students who completed the International Baccalaureate program.
- Advanced Placement International Diploma (APID), for students who complete the Advanced Placement International Diploma program. This is not recognized as a true high school diploma, but may be preferred or required for entry into colleges and universities, especially for students from the United States and Canada studying abroad.
- Cambridge IGCSE, for international schools following the British system of education. This is accepted as equivalent to a US high school diploma, but is insufficient for university entry in the UK.

- Cambridge AICE, for international schools following the British system of education. This is an academic qualification that is accepted for university entry in the UK.
- The names of diplomas vary by country and even from region to region within the same country.

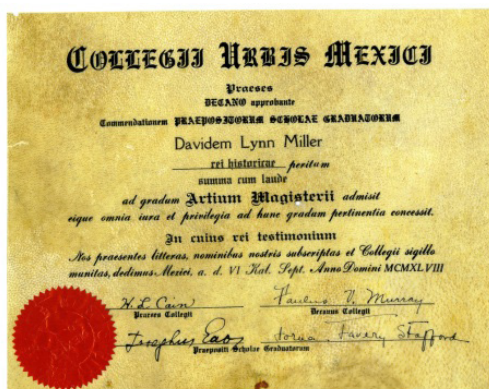
Diploma

A diploma (meaning “folded paper”) is a certificate or deed issued by an educational institution, such as a college or university, that testifies that the recipient has successfully completed a particular course of study or confers an academic degree. In countries such as the United Kingdom and Australia, the word diploma refers to a level of academic award. The words diplomat and diplomacy have the same origin, from the official “folded papers” of accreditation delivered by ambassadors or delegates.

In some countries, such as the UK and Australia, such a document can be called a testimonium or testamur, Latin for “we testify” or “certify” (testari), and so called from the word with which the certificate begins. Alternatively, the document is simply referred to as a degree certificate in these jurisdictions. In Ireland, it is generally called a parchment. The certificate that a Nobel laureate receives is also called a diploma.

The term diploma is also used in some historical contexts, to refer to documents signed by a King affirming a grant or tenure of specified land and its conditions.

Diploma Styles



Sheepskin diploma from Mexico City College, 1948 (in Latin)

Originally, diplomas were made of thin Italian sheepskin, as paper wasn’t economically viable to create because of the lack of skilled workers since the fall of Carthage (famous for its paper) to Rome, and also because it was extremely delicate at that time, with the exception of Carthaginian paper of course. The entire diploma was written by hand because of the lack of economically viable printing presses, as at the time templates would have been carved out of limestone tablets, and since the fall of the Egyptian empire there had been very few skilled workers in the carving of

limestone. Soon, parchment entered use for the diploma in many places but most notably, first at Mexico City College in May, 1949, later the diploma became bound in leather.

Diplomas used to be printed on large paper, but it has become common to print diplomas on standard letter or A4 size paper, except for most educational institutions in the north of France which issue diplomas on A3 size paper or larger. The University of Malta also still issues diplomas and degrees on A3 size paper or larger.



Example of a diploma from a Spanish university in B4 size paper

Usage

Australia

In Australia, there are three varieties of Diploma currently recognized by the Australian Qualifications Framework (AQF):

- a “Diploma”, a qualification granted by vocational education and training (VET) sector or university. It is typically completed with 12 to 18 months of full-time study. When accepted for credit as part of a bachelor’s degree, it is usually deemed to be equivalent to the first year of the degree.
- an “Advanced Diploma”, which is equivalent to an Australian “Associate Degree”.
- a “Graduate Diploma”, which is undertaken after completing a bachelor’s degree (or being deemed to have equivalent knowledge). This can be in a field other than that covered by said degree (e.g., the Graduate Diploma of Education necessary to become a school teacher in most Australian states). It can also be a coursework-only qualification undertaken as additional study in a specialisation within one’s degree area.

The “Vocational Graduate Diploma” was a short lived AQF qualification equivalent to the “Graduate Diploma”, intended to be delivered exclusively in the VET sector. On January 1, 2015, all such qualifications being offered lost the word “Vocational” from their title.

Canada

In Ontario, Canada, diplomas are awarded by colleges of applied arts and technology whereas bachelor degrees are awarded by universities. In Canada, depending on the provincial legislation, there may also be a difference between a college and a university.

Germany and the German Academic Education System in Europe

In Germany, Ukraine, Serbia, Hungary and other countries that adopted the German academic education system, diploma (in German *Diplom*) is the standard academic degree, needing at least 3.5 years to complete it, being comparable with a Bachelor's and Master's degree in one.

Greece

In Greece, diplomas can be awarded by educational institutes as a proof of a certain educational level. The diploma in engineering is a degree provided by Greek technical universities and universities after the successful completion of a five-year integrated study program and it is equivalent to the Master of Engineering degree, which is awarded by the European universities.

Hong Kong

In Hong Kong, advanced diploma, higher diploma and associate degree are below the standard of the honours bachelor's degree. Certificate (not to be confused with postgraduate certificate) and diploma are below the standard of advanced diploma, higher diploma and associate degree. Postgraduate Certificates and Postgraduate Diplomas are taken after the bachelor's degree, and are more vocational oriented than a master's degree.

India

In India, a diploma is a specific academic award usually earned in professional/vocational courses, e.g., Diploma in Nursing Engineering, Pharmacy, Design, etc. In such cases, a diploma is specific in rank than a Bachelor's degree of that discipline but equivalent to general degree in that discipline; for example, Diploma in Engineering of Electronics Engineering is rated differently than Bachelor of Technology in Electronics Engineering but is equivalent to Bachelor of Science in Electronics.

Also, a diploma is concentrated for the area of study. For example, a Diploma in Engineering of Electronics Engineering may be in Advanced Communication Systems (ACS) or Integrated Circuits (IC) or Industrial Electronics (IE). On successful completion of Parts I and II Technician Examination of Institution of Mechanical Engineers, it is equivalent to Diploma in Mechanical Engineering as per a government of India circular. Similarly Diploma in Engineering of Civil Engineering is rated differently than Bachelor of Technology in Civil Engineering but is equivalent to Bachelor of Science in Geology. Another example of a diploma concentrated for the area of study is Diploma in Engineering of Civil Engineering, which may be in Architecture or Urban planning or Landscape architecture. On successful completion of Parts I and II Technician Examination of Institution of Civil Engineers, it is equivalent to Diploma in Civil Engineering as per a government of India circular.

Successful completion of the Diploma Studies (subject to course selection) allows articulation (also known as Lateral Entry) into the second year of Bachelor of Engineering/Bachelor of Technology programs.

Ireland

In the Republic of Ireland, a National Diploma was awarded before 2004. It was at the same level

as the ordinary bachelor's degree and below the honours Bachelor's degree, whilst the Higher Diploma is taken after the bachelor's degree. There is BTEC Extended Diploma also after which one gets progression to a Degree(University).

Latin America

In Mexico and other Latin American countries, a diploma may be awarded for short courses of vocational training. The university-issued diplomas finalizing higher education are most often called *título* (title) or *certificado* (certificate).

Pakistan

In Pakistan, a Diploma is a specific academic award usually earned in professional/vocational courses e.g. Engineering, Nursing, Fashion, etc. In such cases, a diploma holder's degree of that discipline. As diploma studies started on vocational route of study after school for three years, the Bachelor of Technology is the logical next degree for diploma graduates. Also Diploma is concentrated for the area of study, e.g., Diploma in Engineering of Electronics Engineering or Industrial Electronics, Civil Engineering. Graduates of Diplomas work as associates to Engineers and are often called Associate Engineers. Few Postgraduate Diploma or PGD are ranked higher than the Bachelor degree as they are completed after graduation. These are normally a year's worth of coursework after a university degree.

Spain

In the Kingdom of Spain, university diplomas are issued in the name of the King. As such, they are Public Official documents, strictly regulated and protected by the law. They are internationally recognized by the Hague Convention of October 5, 1961.

United Kingdom

In the UK, *diploma* can refer to several different types of academic qualification. The Diploma of Higher Education is a higher education award below the standard of a bachelor's degree. The term can also refer to a Postgraduate Diploma or to the 14–19 Diploma that was introduced in England in September 2008. Postgraduate Diploma award is higher than the bachelor's degree. What the US calls a diploma, is simply called a degree certificate in the UK; however the details are printed in plain English, not in Latin. There is BTEC Extended Diploma also after which one gets progression to a Degree (University). Historically at the University of Cambridge, a Diploma was a postgraduate qualification but it has mostly been replaced by the more common master's degree; however, the Cambridge Diploma in Computer Science retains its archaic name due to its historical significance in the history of computer science.

United States

In the USA, the word *diploma* usually refers to the actual document received at the end of high school, undergraduate studies, or graduate/professional school. This can lead to some confusion when persons who obtained US degrees are presenting their academic credentials in other countries.

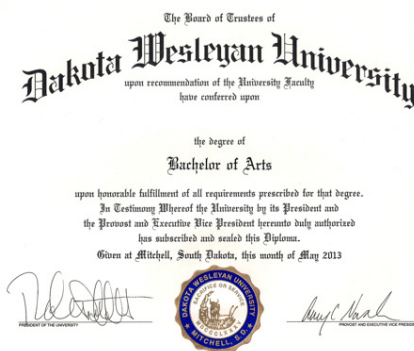
Diploma also can refer to a specific academic or training award. An example of the former is in the field of Nursing where the Diploma in Nursing was offered by hospital based schools.

In an even wider fashion, a diplomat can refer to a person holding a specific accreditation.

International

The International Baccalaureate (IB) Diploma is a pre-university qualification normally taken by students in the final two years of high school.

Bachelor's Degree



A common design template of a bachelor's degree from the United States.

A bachelor's degree (from Middle Latin *baccalaureus*) or baccalaureate (from Modern Latin *baccalaureatus*) is an undergraduate academic degree awarded by colleges and universities upon completion of a course of study lasting three to seven years (depending on institution and academic discipline). In some cases, it may also be the name of a *second* bachelor's degree, such as the Bachelor of Laws (LL.B.), Bachelor of Education (B.Ed.), Bachelor of Civil Law (B.C.L.), Bachelor of Music (B.Mus.), Bachelor of Philosophy (B.Phil.), or Bachelor of Sacred Theology (B.S.Th.) degrees, which in some countries are only offered after taking a first bachelor's degree. The second bachelor's degree is, thus, a type of graduate degree.

The term “bachelor” in the 12th century referred to a knight bachelor, who was too young or poor to gather vassals under his own banner. By the end of the 13th century, it was also used by junior members of guilds or universities. By folk etymology or wordplay, the word *baccalaureus* came to be associated with *bacca lauri* (“laurel berry”) in reference to laurels being awarded for academic success or honours.

Under the British system, and those influenced by it, undergraduate academic degrees are differentiated either as *pass degrees* (also known in some areas as *ordinary* degrees) or as *honours degrees*, the latter sometimes denoted by the appearance of “(Hons)” after the degree abbreviation. An honours degree generally requires a higher academic standard than a pass degree, and in some universities a fourth year of study. In some countries, e.g., Australia and Canada, the honours degree should not be confused with the “postgraduate” bachelor's degree “with honours” or the *baccalaureatus cum honore* degree. It is a consecutive academic degree, which is the continuation

of a completed (honours) bachelor's degree program in the same field and is usually obtained in order to join a doctoral programme; it requires a minimum of one year, but may also take longer.

Variations

Africa

In most African countries, the university systems follow the model of their former colonizing power. For example, the Nigerian university system is similar to the British system, while the Ivorian system is akin to the French.

Algeria

Bachelor's degrees in Algerian universities are called “سَناس يَلَلَا” in Arabic or *la license* in French; the degree normally takes three years to complete and is a part of the LMD (*license, master, doctorat*) reform, students can enroll in a bachelor's degree program in different fields of study after having obtained their *baccalauréat* (the national secondary education test). The degree is typically identical to the program of France's universities, as specified in the LMD reform. Bachelor's degree programs cover most of the fields in Algerian universities, except some fields, such as Medicine and Pharmaceutical Science.

Botswana

Bachelor's degrees at the University of Botswana normally take four years. The system draws on both British and American models. Degrees are classified as First Class, Second Class Division One (2:1), Second Class Division Two (2:2) and Third as in English degrees, but without being described as honours. The main degrees are named by British tradition (Arts, Science, Law, etc.), but in recent years there have been a numbers of degrees named after specific subjects, such as Bachelor of Library and Information.

Morocco

In Morocco, a bachelor's degree is referred to as *al-ijāzah* (Arabic, French: *license*). It lasts three years that are further divided into two cycles. The first cycle comprises the first, or propedeutic, year. Students, after successfully completing their first two years, can pursue either theoretical specialization (*études fondamentales*) or professional specialization (*études professionnelles*). The second cycle is one year long, after completing which, students are conferred upon the *Licence d'études fondamentales* or the *Licence professionnelle*. This academic degree system was introduced in September 2003.

Nigeria

University admission is extremely competitive, with attendant advantages and disadvantages. Nonetheless, it takes four to five years to complete a bachelor's degree. In cases of poor performance, the time limit is double the standard amount of time. For example, one may not study for more than 10 years for a five-year course. Students are normally asked to leave if they must take longer. Nigerian universities offer B.Sc., B.Tech. (usually from Universities of Technology),

B.Arch. (six years), and other specialized undergraduate degrees, such as B.Eng. Science undergraduate degrees may require six months or a semester dedicated to SIWES (Students Industrial Work Experience Scheme) but it is usually mandatory for all engineering degrees. A semester for project work/thesis is required, not excluding course work, during the bachelor thesis in the final year. The classifications of degrees: first-class, second-class (upper and lower), third-class (with honours; i.e., B.Sc. (Hons)) and a pass (no honours). First- and second-class graduates are immediately eligible for advanced postgraduate degrees (i.e., M.Sc. and Ph.D.), but other classes may be required for an additional postgraduate diploma before such eligibility.

Furthermore, all graduating students are obliged to do the National Youth Service Corps (NYSC) requirement, which usually takes one year, after which they are eligible to pursue higher degrees. The NYSC is a paramilitary service that involves students' being posted to different parts of the country to serve in various capacities. Principal objectives of the NYSC are to forge national cohesion, encourage students to apply their obtained knowledge to solving problems of rural Nigeria, and others. The NYSC was established by law after the Nigerian Civil War.

Polytechnical schools (polytechnics) in Nigeria are not considered universities. They are mandated to educate technicians of high calibre; they offer the OND (ordinary national diploma) and the HND (higher national diploma). The polytechnics focus very strongly on practical technical training. The B.Sc. and HND are compared in engineering circles but there are significant differences in training philosophies.

Honours degrees in Nigeria are differentiated only on the basis of performance. Honours degrees include the first-class degree, second-class degrees (upper and lower) and the third-class degree, but not the pass. All university students must do an independent research project which applies the knowledge obtained during the previous years of study.

The project work must be submitted in the semester before graduation and usually takes a significant number of points. Further course work is not precluded during the project work, but the courses are fewer and are at an advanced level. Project work is orally defended before the faculty and before peers. In the sciences and engineering a demonstration of the project is usually required. The exceptions are theoretical work, for which a media project is required.

South Africa

In South Africa, an honours degree is an additional postgraduate qualification in the same area as the undergraduate major, and requires at least one further year of study as well as a research report.

Kenya

In Kenya, university education is highly valued and supported by the government, affluent individuals as well as corporate entities who demonstrate this by providing loans and scholarships to students who perform exceptionally well in their Kenya Certificate of Secondary Education (KCSE) examination. A bachelor's degree is awarded to students who successfully complete a three to seven-year course depending on the area of study. For most degree programs, a research project and an internship period after which a report is written by the student is a must before the student is

allowed to graduate. In 2012, a number of select colleges were upgraded to university status in a bid to increase the intake of students into the degree program.

Asia

Bangladesh

In Bangladesh, universities and colleges award three- and four-year degrees (three-year degrees courses are called pass courses and four-year degree courses are called honours courses) in science and business (B.Sc., B.B.S., B.B.A., four-year and three months, etc.) and three- and four-year degrees in arts (B.A., B.S.S., etc.). Engineering universities provide four-year degree programs for bachelor's degree courses of study. Medical colleges have five-year degree programmes. In law education there is a two-year LL.B. degree after completing three years in a B.A. program for a total of five years of study. There is also a four-year LL.B. honours degree. All of these programs begin after achieving the Higher Secondary Certificate (HSC—in total 12 years of education).

China

Since the undergraduate education system in China is modeled after its American counterpart, all the degrees are adapted from those of the United States excepting the release of the degree certificate. Once a student has fulfilled his/her course requirements, a graduate certificate will be given. In order to get the degree, a student must finish and pass the dissertation stage; only then will he or she be awarded a degree credentialed by the Ministry of Education of the People's Republic of China. Four years of education is the standard length, although some private small colleges not credentialed by the Ministry of Education do offer three-year programs. Normally, about 90% of graduates are able to obtain a degree; however, no degree is awarded with excellency or honor. It is also referred to as a "Xueshi" (學士).

Fiji

The colonial link and the establishment of the University of the South Pacific in 1968 allowed the education system to follow suit from the qualification system of the Commonwealth. University of the South Pacific is the only university in the Oceania region to be internationally recognized outside Australia and New Zealand with its bachelor's and other awards program. It is also the highest ranked in the university ranking in the island region and also ranked above some Australian universities like the University of Canberra, University of Sunshine Coast and New Zealand universities like Lincoln University and Waikato Institute of Technology.

India

Bachelor's degrees in engineering are four-year degree programmes while medical colleges are five-year degree programmes. Bachelor's degrees (BE, graduate in engineering, BArch, BTech, BSc) that also begin after secondary school year twelve (also called +2). The Bachelor of Technology (commonly abbreviated as BTech) is an undergraduate academic degree conferred after completion of a three or four-year programme of studies at an accredited university or accredited university-level institution. In India, the Bachelor of Technology degree is a professional engineering degree awarded after completion of four-years of extensive/vast engineering study and research.

In India, BTech. is otherwise called as BE. Some universities offer it as BTech and some as BE. However, the name of degree does not make any difference viz, as the curriculum of AICTE/UGC is standard all across. Mostly all autonomous government organisation confer a BTech degree and private institutes which are affiliated to regional universities confer BE degree. The Bachelor of Architecture (BArch) degree programme is of five years' duration while still people could pursue civil engineering which has a duration of four years its is under BTech as it known in India. The Bachelor of Science in Agriculture, BSc or is a four-year full-time degree. There are also some integrated programmes. The techno-legal degree like BTech with LLB is a six-year full-time degree course in Engineering and Law. In the general curriculum, there are three and four year programmes, with Honours track being in the four year category. A bachelor's degree (BA, BCom, BSc, BBA etc.) is awarded by the respective university to which the college is affiliated which is of three years. BCom is most commonly pursued degree in India. The duration of the course is three to four years and minimum eligibility is 10+2 from any stream. In India, Bachelor of Journalism is of three years. Journalism Courses in India are known by various names like BJ (Bachelor of Journalism), BCJ (Bachelor of Communication and Journalism), BMM (Bachelor of Mass Media), BJMC (Bachelor of Journalism and Mass Communication), BAJMC (Bachelor of Arts in Journalism and Mass Communication), BAMC (Bachelor of Arts in Mass Communication). Employability prospects vary by the reputation of the institute and course. A majority of BBA colleges in India offer this bachelor's degree programme in the form of a three-year course. However, there are four-year part-time courses as well. A student is eligible to study BBA in India only if s/he has passed the 10+2 level examination or higher secondary examination from a recognised board or council in the country. A BBA degree can be portrayed as the gateway to the global business sector. This authentic business management course includes subjects like the following:

- Marketing
- General Management
- Finance
- Human Resource Management (HRM)
- Statistics
- Supply Chain Management

Integrated Bachelor of Computer Application (BCA) can be pursued in India. Bachelor of Computer Applications is a three-year under-graduate degree course awarded in India in the field of Computer Applications. Some students use online or distance education programs to earn this degree.

The course aims at realising the following student objectives:

- To demonstrate a sound knowledge in key areas of computer science or industrial computing.
- To demonstrate a substantial understanding of concepts in key areas of computer science.
- To carry out the required analysis and synthesis involved in computer systems, information systems and computer applications.
- To demonstrate professional competence in developing software and in its design and implementation.

- To develop sound practical skills to enable them to addressing problems which arise from computer systems and applications.

After completion of this course, students may move on to higher studies, earning degrees such as:

- Master of Computer Application (MCA)
- Master in Business Administration (MBA)
- Master of Science in Computer Science (MSc-CS)
- Master of Science in Information Technology (MSc-IT)

Other students move directly to industry, working as programmers, networking professionals, graphics designers, and related positions.

Some of the institutes also provide the graduate diploma courses. A graduate diploma is basically the same thing as a graduate certificate. This terminology is more common in England, Australia, Canada, Scotland, Wales, etc., whereas “certificate” is more common in the US.

Indonesia

In Indonesia, most of the current bachelor’s degrees are domain-specific degrees. Therefore, there are probably more than 20 bachelor’s degrees. For instance, S.Psi for *Sarjana Psikologi* (literally translated as “Bachelor of Psychology/B.Psy., B.A.”), S.T. for *Sarjana Teknik* (literally translated as “Bachelor of Engineering”), S.Si. for *Sarjana Sains* (literally translated as “Bachelor of Science”), S.Farm for *Sarjana Farmasi* (literally translated as “Bachelor of Pharmacy”), S.E for *Sarjana Ekonomi* (literally translated as “Bachelor of Economy”), S.Kom. for *Sarjana Ilmu Komputer* (literally translated as “Bachelor of Computer Science”), or S.Sos. for *Sarjana Ilmu Sosial* (literally translated as “Bachelor of Social Sciences”). In the past, the Indonesian academic system adopted the old European/western degrees, such as the Ir (*ingénieur*) for an engineering degree and doctor’s degree (*doktorandus*) for a degree in either social or natural sciences.

Jordan

Since the undergraduate education system in Jordan is modeled after its American counterpart, all the degrees are adapted from those of the United States excepting the release of the degree certificate. Once a student has fulfilled his/her course requirements, a graduate certificate will be given. In order to get the degree, a student must finish and pass the dissertation stage; only then will he or she be awarded a degree credentialed by the Ministry of Higher Education of the Hashemite Kingdom of Jordan. Four years of education is the standard length.

Nepal

In Nepal, the bachelor’s degree was initially a four-year program for courses like Bachelor of Business Studies (B.B.S.), Bachelor of Sciences (B.Sc.), Bachelor of Education (B.Ed.), Bachelor of Arts (B.A.) from Tribhuvan University, Pokhara University, Purbanchal University and other new regional university equivalent but now it is mostly a four-year program for new courses like Bachelor of Business Administration (B.B.A.), Bachelor of Business Information System (B.B.I.S.),

Bachelor of Information Management (B.I.M.), Bachelor of Engineering (B.E.), Bachelor of Science in Computer Studies and Information Technology (B.Sc.) C.S.I.T. Some bachelor's programs are still three years long, such as the Bachelor of Arts (B.A) and Bachelor of Education (B.Ed). It is completed after 10+2 level (High School). Bachelor of Business Administration (B.B.A), Bachelor of Information Management (B.I.M.), Bachelor of Business Information Systems (B.B.I.S.), Bachelor of Engineering, and Bachelor of Science in Computer Science and Information Technology (B.Sc.C.S.I.T.) are a few popular bachelor's degree programs. B.Sc. and B.B.Sc. have recently turned into four year programs from three year programs. In Nepal, Tribhuvan University as an oldest and biggest University based on number of student and academic department, Kathmandu University, Purbanchal University, Pokhara University, Nepal Sanskrit University and other new regional universities are operating currently. M.B.A. and B.B.A. from all universities are examined under the system of Percentage and G.P.A, and traditional university courses are accessed on division base like pass division, second division, first division and distinction. In Nepal, there is no top up, honours and exchange or related tie up degree courses authorised and practiced by Nepalese Government and other educational Institution but these day, Affiliation from foreign universities, online and distance mode is popular in modern working youth population. M.B.A., B.B.A., B. Pharm., B. Sc. Nursing, Bachelor of Nursing (B.N.), B. E. has a trending professional demand in Nepalese market.

Malaysia

Institutes of higher learning in Malaysia provide three or four years of education leading to a B.Sc. Hons Degree. The standards of categorization is almost consistent among Malaysian Universities. Candidates who excel in their academic results will be awarded a First Class Bachelor Hons Degree (usually 3.67 CGPA and above), followed by Class Second Upper (usually between 3.00-3.66 CGPA), Class Second Lower (usually 2.50-2.99 CGPA), Class Three (usually 2.00-2.49 CGPA) and General Degree (Without Honours), for usually 1.99 and below CGPA candidates.

Pakistan

In Pakistan, commerce and science colleges provide four-year bachelor's degrees (B.A., B.Sc., B.B.A., B.Com. etc.). Generally these programs are of four years duration as elsewhere in the world and begin after completing higher secondary school education by receiving a HSSC certificate acknowledging one's twelve years of study by the respective board. After successful completion of these programs, a bachelor's degree is awarded by the respective university. Some colleges are affiliated with a university (mostly the state's central university) and teach a part-time degree equal to fourteen years of education such as a two-year B.A., B.Com. etc. A student may enroll in a two-year B.A., BCOM as well as a four-year B.A. as an external candidate (external candidate are enrolled for examination & study program on self basis or through private tuition providers). Main universities offering these two programs are University of Punjab and University of Karachi where more than 50,000 students appear in B.A. and B.Com. exam as external candidates.

Engineering and medical colleges provide four- and five-year degree programs respectively for bachelor's degrees (BE, B.Sc.Eng., B.Arch., B.Tech. (Hons) and M.B.B.S) that also begin after secondary school year 12. The Bachelor of Architecture (B.Arch.) degree program is of five to six years' duration.

Bachelor of Technology (Hons) is a four-year undergraduate degree program in engineering technology (Chemical, Electrical, Mechanical, Civil, Electronics). When degree is earned after a three-year post secondary Diploma of Associate Engineer, it is called B.Tech. (Hons), and when a four-year B.Tech. degree is obtained after FSc (Two-year intermediate in Science), then it is called a B.S.Tech.

Philippines

In the Philippines, where the term “course” is commonly used to refer to a bachelor’s degree major, course of study or program, several undergraduate categories exist—the two most common degrees awarded being Bachelor of Science (B.Sc.) and Bachelor of Arts (B.A. or A.B.). Specializations (“majors”) in economics, business administration, social work, agriculture, nursing, accountancy, architecture and engineering are offered as B.S. degrees in most colleges and universities. The latter three specializations require five years of schooling, in contrast to the standard of four years. Other common degrees are Bachelor in Education (B.Ed.) and Bachelor of Laws (LL.B., a professional degree). Being patterned after the United States, all universities and colleges offer graduation with honors—*cum laude*, *magna cum laude*, and *summa cum laude*.

Republic of Korea

Universities, colleges, and institutions of higher learning provide the bachelor’s degree, called ‘haksa’ (Korean: 학사). For example, a university student who majored in literature and graduates obtains a B.A., called ‘munhaksa’ (Korean: 문학사). Even if he or she does not go to an institution of higher learning, a person can get a bachelor’s degree through the Bachelor’s Degree Examination for Self-Education.

Sri Lanka

Recognised institutes of higher learning only are authorised to award degrees in Sri Lanka. Three years full-time bachelor’s degree without an area of specialization is known as a general degree. A degree with a specialization (in accounting, chemistry, plant biotechnology, zoology, physics, engineering, IT, law, etc.) is known as a special degree and requires four years of study and more entrance qualifications. A degree in medicine, an M.B.B.Sc., requires a minimum of six years.

Oceania

Australia

In Australia, a bachelor’s degree is a three to five-year program. Entry to a number of professions, such as law practice and teaching, require a bachelor’s degree (a ‘professional’ degree). Other degrees, such as Bachelor of Arts don’t necessarily elicit entry into a profession, though many organisations require a bachelor’s degree for employment.

A one-year “postgraduate” (With) Honours degree can be achieved as a consecutive stand-alone Bachelor (with) Honours degree following a bachelor’s degree in the same field. In some cases, it may be offered as an “on-course” degree program, which takes one year of research at the completion of an undergraduate four-year (Bachelor’s) degree. It is usually available only to students

who achieve a distinction average in their undergraduate studies. Generally, the (With) Honours degree involves completion of higher-level courses and the submission of a research thesis. In this way, the Australian Honours degree differs from the English/Welsh Honours, which requires only the completion of a shorter “dissertation” as part of the three-year bachelor’s degree.

Some bachelor’s degrees (e.g. engineering and environmental science) include an integrated honours degree as part of a four-year program. Honours is generally for students who want to take up a research track for postgraduate studies, and increasingly for those who want an extra edge in the job market. Marking scales for Honours differ; generally, First Class Honours (80–100%) denotes an excellent standard of achievement; Second Class Division 1 (75–79%) a high standard; Second Class Division 2 (70–74%) a good standard; Third Class (65–69%) satisfactory standard; between 50–64% the degree is not awarded with honours, but may be conferred as a pass degree; a final mark below 50% is a fail of the course.

The Honours program allows students to pursue an independent research project in an area of interest under the supervision of an academic staff member. Students acquire skills which will enable them to work without close supervision in a research environment in industry or government, or to proceed to a higher degree by research (such as a Ph.D.). First-class and second-class (first division) is generally the standard required for entry into a Ph.D. or very high research Master’s program in Australia. In science, a second-class research honours or higher is generally a prerequisite for entrance to a Ph.D. program (a Master’s is an uncommon route).

New Zealand

In New Zealand, only recognised institutions—usually universities and polytechnics—have degree-awarding powers.

Most bachelor’s degrees are three years full-time, but certain degrees, such as the Bachelor of Laws and the Bachelor of Engineering degrees, require four years of study. A Bachelor of Medicine degree requires a minimum of six years.

Where students opt to study two bachelor’s degrees simultaneously—referred to as a “conjoint degree” or “double degree”—an extra year of study is added. The number of years of study required is determined based on the degree with the greatest number of years. For example, a B.Com. degree requires three years of full-time study, but a double B.Com.–LL.B. degree will require five years of full-time study because the LL.B. degree is four years long. Exceptional students may choose to complete a degree in a shorter amount of time by taking on extra courses, usually with the help of summer school. Students who complete a double degree program will have two separate bachelor’s degrees at the end of their studies.

Consistently high-performing students may also be invited to complete the ‘honours’ program. This usually requires an extra year of study with an extra honours dissertation. An honours award is credited with “Hons.” (e.g., Bachelor of Laws (Hons.)). Some degrees also offer a Post Graduate Diploma, which often consists of the same workload, but with added flexibility. PGDip does not usually require a dissertation. However, the student may complete one if desired. A diploma award is credited with ‘PGDip’ and the name of the degree (for example, ‘PGDipArts’ or ‘PGDipScience’).

The Americas

Usually the region presents bachelor's, Master's, doctoral, and postdoctoral degrees.

Canada

Education in Canada is governed independently by each province and territory, and thus there are differences between provinces when it comes to the granting of degrees. Each province loosely follows the United States-based model but, e.g. in Québec, also the French-based, as well as the United Kingdom-Irish based and Commonwealth based model. Bachelor's degrees may take either three or four years to complete and are awarded by colleges and universities. In many universities and colleges bachelor's degrees are differentiated either as bachelor's or as honours bachelor's degrees. The term "Honours" is an academic distinction, which indicates that students must achieve their bachelor's degree with a sufficiently high overall grade point average; in addition, some programs may require more education than non-honours programs. The honours degrees are sometimes designated with the abbreviation in brackets of '(Hon(s))'. It should not be confused with the consecutive bachelor's degree "with Honours", from Latin "Baccalaureatus Cum Honore", abbr. e.g. B.A. hon. *de jure* without brackets and with dot. It is a "postgraduate" degree which is considered to be the equivalent of corresponding maîtrise degrees under the French influenced system.

Going back in history, a three-year bachelor's degree (also known e.g. in Québec as *grade de bachelier*) was also called a *pass degree* or *general degree*. A student who first achieves a general bachelor's degree with a sufficiently high overall average may be admitted to a "postgraduate" Baccalaureatus Cum Honore degree in the same field; it requires a minimum of one year but may take longer; however, it typically does not exceed two years. Students are required to undertake a long high quality research empirical thesis (Honours Seminar Thesis) combined with a selection of courses from the relevant field of studies. The consecutive degree is essential if a student's ultimate goal is to study towards a two- or three-year very high research master's degree qualification. A student holding a Baccalaureatus Cum Honore degree also may choose to complete a Doctor of Philosophy (Ph.D.) program without the requirement to first complete a master's degree. Over the years, in some universities certain Baccalaureatus Cum Honore programs have been changed to corresponding master's degrees.

In the province of Quebec, students have to go through a minimum of two years of college before entering, for example, a three-year Bachelor of Science (B.Sc.) or a four-year Bachelor of Engineering (B.Eng.) program. As a consequence, there is no *de jure* "honors degree" (although some universities market some of their programs as being *de facto* honors degrees in their English-language materials), but there are some specializations called "concentrations" in French, which are mostly taken as optional courses.

In the province of Ontario, the vast majority of bachelor's degrees offered by Ontario universities are academic in nature. On the other hand, Ontario provincial legislation requires bachelor's degrees offered by Ontario colleges to be applied and vocationally-focused

United States

Bachelor's degrees in the United States are typically designed to be completed in four years of full-time study, although some programs (such as engineering or architecture) usually take five,

and some universities and colleges allow ambitious students (usually with the help of summer school, who are taking many classes each semester, and/or who have existing credit from high school Advanced Placement or International Baccalaureate course exams) to complete them in as little as three years. Some US colleges and universities have a separate academic track known as an “honors” or “scholars” program, generally offered to the top percentile of students (based on GPA), that offers more challenging courses or more individually directed seminars or research projects in lieu of the standard core curriculum. Those students are awarded the same bachelor’s degree as students completing the standard curriculum but with the notation *in cursu honorum* on the transcript and the diploma. Usually, the above Latin honors are separate from the notation for this honors course, but a student in the honors course generally must maintain grades worthy of at least the *cum laude* notation anyway. Hence, a graduate might receive a diploma *Artium Baccalaureatum rite* or *Artium Baccalaureatum summa cum laude* in the regular course or *Artium Baccalaureatum summa cum laude in cursu honorum* in the honors course.

If the student has completed the requirements for an honors degree only in a particular discipline (e.g., English language and literature), the degree is designated accordingly (e.g., B.A. with Honors in English). In this case, the degree candidate will complete the normal curriculum for all subjects except the selected discipline (“English,” in the preceding example). The requirements in either case usually require completion of particular honors seminars, independent research at a level higher than usually required (often with greater personal supervision by faculty than usual), and a written honors thesis in the major subject.

Many universities and colleges in the United States award bachelor’s degrees with Latin honors, usually (in ascending order) *cum laude* (“with honor/praise”), *magna cum laude* (“with great honor/praise”), *summa cum laude* (“with highest honor/praise”), and the occasionally seen *maxima cum laude* (“with maximal honor/praise”). Requirements for such notations of honors generally include minimum grade point averages (GPA), with the highest average required for the *summa* distinction (or *maxima*, when that distinction is present). In the case of some schools, such as Bates College, Colby College, Middlebury College, Guilford College, Franklin College Switzerland, and larger universities like the University of Virginia, Princeton University, North Carolina State University, University of Massachusetts Amherst, a senior thesis for degrees in the humanities or laboratory research for natural science (and sometimes social science) degrees is also required. Five notable exceptions are Reed College, Massachusetts Institute of Technology, The Evergreen State College, Sarah Lawrence College, and Bennington College, which do not have deans’ lists, Latin honors recognitions, or undergraduate honors programs or subjects.

Mexico

Bachelor’s degrees may take an average of five years (from four to five years) to complete depending on the course load and the program and they are awarded by colleges and universities. Medicine is from 6 to 7 years. Each college has its own curriculum and requirements with an emphasis of their choice, governed independently by each state of the republic. After finishing all the subjects the student require a final work, which means the completion of particular honors seminars, research and development or a written thesis in a particular field. Mexico’s regulations established as an obligation in order to receive their license and title the fulfillment of a “Social Service” to the nation (usually for those who finished their studies in a public institution) as a remuneration to so-

ciety in the form of social actions, the benefits, as students, were received during training. This requirement takes about six months to one year depending on the type of degree. Bachelor's degree should not be falsely related with its Spanish cognate "Bachiller", which designate a prerequisite for matriculate in a career or bachelor studies. The official name for a bachelor's degree in Mexico is "Licenciado" and such studies are referred as "Licenciatura".

Bachelor's degrees should not be confused with Engineering Degrees, where an *Ingeniería* is prefixed to the name and requires additional courses for certification as an Engineer.

Brazil

In Brazil, a bachelor's degree takes from three years to six years to complete depending on the course load and the program. A bachelor's degree is the title sought by Brazilians in order to be a professional in a certain area of human knowledge. Master's and doctoral degrees are additional degrees for those seeking an academic career or a specific understanding of a field.

Even without a formal adhesion to the Bologna system, a Brazilian "bachelor's" would correspond to a European "first cycle." A Brazilian "bachelor's" takes three to six years for completion, as well as usually a written monograph or concluding project, in the same way that a European bachelor's can be finished in three to four years, after which time Europeans may embark on a one- to two-year 2nd cycle program usually called a "Master's", according to the Bologna Process.

Depending on programs and personal choices, Europeans can achieve a master's degree in as little as four years (a three-year bachelor's and a one-year Master's) and as long as six years (a four-year bachelor's, a two-year Master's) of higher education. In Brazil it would be possible to have a specialization "lato-sensu" degree—which differs from a Brazilian "stricto-sensu" master's degree—in as little as three years (two years for a "tecnólogo" degree and an additional year for a specialization) or as long as eight years (six years for professional degrees, plus two years for a master's "stricto-sensu" degree—typical in medicine or engineering).

Colombia

In Colombia, secondary school has two milestones, in 9th and 11th grades. After completing the first 4 years of secondary school (6th, 7th, 8th and 9th grades), a student is considered to have completed the basic secondary school while after completed the last two years (10th and 11th grades) is considered to have completed "bachillerato" or high school diploma.

This degree can be only academic (the most common) or:

- military, given by military specialised schools and gives the opportunity for male students not to go to obligatory military service.
- commercial, which grants students focussed skills on accountancy.
- technical, which grants students focussed skills on technical abilities such in electricity, mechanics and related matters.
- Academic, which grants students focussed skills on elementary education.

After graduating from high-school, hopeful students must present a nationwide exam that de-

termines their eligibility to apply for their desired program, depending on the score the student achieves on the exam. In Colombia, the system of academic degrees is similar to the US model. After completing their “bachillerato” (high school), students can take one of three options. The first one is called a “Profesional” (professional career), which is similar to a bachelor’s degree requiring from four to six years of study according to the chosen program, However, strictly-career-related subjects are taken from the very beginning unlike US where focused career-related subjects usually are part of the curriculum from the third year. The other option is called a “Técnico” (technician); this degree consists of only two and a half years of study and prepares the student for technical or mechanical labors. Finally, the third option is called a “Tecnólogo” (equivalent to an associate degree), and consist of 3 years of study. A technical school gives to the student, after a program of two years, an under graduate degree in areas like software development, networks and IT, accountancy, nursing and other areas of health services, mechanics, electricity and technic-like areas.

Universities offer graduate degrees in ICFES endorsed programs like medicine, engineering, laws, accountancy, business management and other professional areas. A typical undergraduate program usually takes 10 or 11 semesters and some (i.e. medicine) require an additional period of service or practice to apply for the degree. A student who has obtained an undergraduate degree can opt to continue studying a career after completing their undergraduate degree by continuing onto Master’s and Doctorate degrees. They can also choose to a specialization in certain fields of study by doing an extra year.

ICFES is the national authority for the education quality. A complete list of under graduate and graduate programs approved by ICFES can be found here: <http://snies.mineducacion.gov.co/consultasnies/programa/buscar.jsp?control=0.09832581685767972>

Guyana

In Guyana, the universities offer Bachelor programs in different streams like Bachelor of Atrs (B.A), Bachelor of Science in Nursing, Design and Arts, Liberal Arts, Psychology, Doctor of Medicine (MD) and other health science programs. These programs are delivered by University of Guyana, Texila American University, Green Heart Medical University, Lesley university and many more offers these bachelor programs.

Costa Rica, El Salvador and Venezuela

In these countries, there are two titles that should not be confused:

1. High school students who pass their *bachillerato* exams obtain a certificate of *Bachiller en Educación Secundaria* (“bachelor’s degree in secondary education”), which is needed in order to enter a university and is usually requested by companies in their profiles.
2. University students obtain a *licenciatura* degree in their respective fields after completing four years of education, five in Venezuela and El Salvador, (and meeting other requisites unique to each institution), enabling them to work as professionals in their chosen areas; for example, a *Bachiller en Enseñanza Secundaria* (“bachelor’s degree in secondary teaching”) enables a person to work as a high school teacher. Currently, the trend is for universities not to offer a bachelor’s degree and to offer instead a licentiate’s or “Ingeniero” degree after five years of education.

Europe

Bachelor's degrees exist in almost every country in Europe. However, these degrees were only recently introduced in some Continental European countries, where bachelor's degrees were unknown before the Bologna process. Undergraduate programs in Europe overall lead to the following most widely accepted degrees:

- Bachelor of Science degree (B.Sc.), 35%–40% of undergraduate programs;
- Bachelor of Arts degree (B.A.), 30%–35% of undergraduate programs;
- Bachelor of Laws degree (LL.B.), 1% of total programs, however widely accepted in the law discipline.

The rest of the programmes typically lead to Bachelor of Engineering degree (B.Eng.), Bachelor of Business Administration degree (B.B.A.), or other variants. Also, associate degrees are rising in popularity on the undergraduate level in Europe.

On a per-country, per-discipline and sometimes even per-institute basis, the duration of an undergraduate degree program is typically three or four years, but can range anywhere from three to six years. This is an important factor in the student's decision-making process.

Austria

The historical situation in Austria is very similar to the situation in Germany. The traditional first degrees are also the *Magister* and the *Diplom*. A new piece of educational legislation in 2002 re-introduced the bachelor's degree (awarded after three or four years) and master's degree (another one or two years) in Austria.

Belgium

In accordance with the agreements made in the Bologna process, the system of higher education in Belgium was reformed. A three-year bachelor's training was introduced to replace the former two- or three-year degree, which was called "*graduaat*" (in Dutch)/"*graduat*" (in French) or "*kandidatuur*" (in Dutch)/"*candidature*" (in French), the latter being part of a college or university education.

Croatia

Most universities and colleges in Croatia today offer a three-year bachelor program, which can be followed up typically with a two-year master's (graduate) program.

- Upon completion of undergraduate professional studies, students are awarded the professional title of Professional Bachelor, abbreviated bacc. (*baccalaureus* or *stručni prvostupnik* in Croatian) with a reference to a specialisation.
- Undergraduate university studies normally last for three to four years and upon completion, students are awarded an academic title of Bachelor, abbreviated univ. bacc. (*baccalaureus* or *sveučilišni prvostupnik* in Croatian).

Academies that specialize in the arts, e. g. the Academy of Fine Arts in Zagreb, have four-year bachelor's programs followed by a one-year master's.

Czech Republic

Historically, the baccalareus was the undergraduate degree awarded to students who graduated from the course of trivium (grammar, dialectic and rhetoric) at a faculty of liberal arts (either at the Charles University or at the University of Olomouc). It was a necessary prerequisite to continue either with the faculty of liberal arts (quadrivium leading to a master's degree and further to a doctoral degree) or to study at one of the other three historical faculties—law, medicine or theology.

A bachelor's degree, abbreviated Bc.A., in the field of fine arts, and Bc. (*Bakalář* in Czech) in other fields is awarded for accredited undergraduate programs at universities and colleges.

The vast majority of undergraduate programmes offered in the Czech Republic have a standard duration of three years.

In the Czech tertiary education system, most universities and colleges today offer a three-year bachelor program, which can be followed up typically with a two-year master's (graduate) program. Some specializations, such as doctors of medicine and veterinary doctors, hold exceptions from the general system in that the only option is a six-year master's program with no bachelor stage (graduate with title doctor). This is due mainly to the difficulty of meaningfully splitting up the education for these specialisations.

Denmark

The bachelor's degree was re-introduced at universities in Denmark in 1993, after the original degree (baccalaureus) was abandoned in 1775. The bachelor's degree is awarded after three or four years of study at a university and follows a scheme quite similar to the British one. Two bachelor's degrees are given at the university level today:

- Bachelor of Science (B.Sc.), awarded to students with main focus on scientific, medical, or technical areas;
- Bachelor of Arts (B.A.), awarded to students whose main focus is on humanistic, theological, or jurisprudence areas.

However, both in the business and the academic world in Denmark, the bachelor's degree is still considered to be “the first half” of a master's (candidatus). It is often not considered a degree in its own right, despite the politicians' best attempts to make it more accepted.

The bachelor's degree has also been used since the late 1990s in a number of areas like nursing and teaching. Usually referred to as a “Professional Bachelor” (Danish: *professionsbachelor*), these degrees usually require 3 to 4½ years of combined theoretical and practical study at a so-called “(professional) university college” (Danish: *professionshøjskole*). These professional bachelor's degrees do grant access to some university Master's program. These professional bachelor's degrees are considered to be a full education.

Faroe Islands

Bachelor's degrees in the Faroe Islands are much the same as in Denmark.

France

The traditional bachelor's degree is the equivalent of the French *Maîtrise* four-year degree. Since the new European system of 2004 LMD Bologna process was founded, it has become standard to recognize a bachelor's degree over three years with a *licence* degree, a master's degree over five years, and a doctorate over eight years.

Some private institutions are however literally naming their degrees Bachelor's, Master's and Executive, such as the Bordeaux MBA/Collège International de Bordeaux. Not all of them are yet accredited by the French State, but offer similar course subjects, structures and methods to those found in Anglo-Saxon institutions.

Germany

Bachelor's degrees, called "*Bakkalaureus*", originally existed in Germany but were abolished up until 1820 as part of educational reforms at this time. The Abitur degree—the final degree received in school after a specialized 'college phase' of two years—replaced it, and universities only awarded graduate degrees.

The Magister degree, a graduate degree, was awarded after five years of study. In 1899, a second graduate degree, the Diplom, was introduced when the *Technische Hochschulen* received university status. Since the introduction of the universities of applied sciences, a shortened version of the latter, referred to as *Diplom (FH)* and designed to take three to four years, was introduced between 1969 and 1972.

However, to comply with the Bologna process, in 1998 a new educational law reintroduced the bachelor's degree (first degree after three years of study) in Germany. Today, these degrees can be called either "*Bakkalaureus*" or "Bachelor" (in accordance with federal law), but the English term is more common. The traditional degrees were abolished in 2010.

The traditional degrees have been re-mapped to the new European Credit Transfer and Accumulation System (ECTS) point system to make them comparable to the new bachelor's degree. Traditional and Bologna process degrees are ranked as follows in Germany:

- Bachelor o.d. (ordinary degree): New, 180, 210, or 240 ECTS points required;
- Diplom FH: Traditional, 240 ECTS;
- Diplom Uni or TH: Traditional, 300 ECTS;
- Master: New, also 300 ECTS (including bachelor).

Italy

The old four-, five-, or six-year laurea system was discontinued in the early 2000s as per the Bologna process, with some exceptions such as law school or medical school. The bachelor's

degree, called “Laurea”, takes three years to complete (note that Italian students graduate from high school at age 19) and grants access to graduate degrees (known as “Laurea Magistrale”). In order to graduate, students must earn 180 credits (ECTS) and write a thesis for which students have to elaborate on an argument under the supervision of a professor (generally from three to eight ECTS). Graduation marks go from 66 to 110. According to each faculty internal ruling, a *lode* may be awarded to candidates with a 110/110 mark for recognition of the excellence of the final project.

Former Yugoslav Republic of Macedonia

In 2003, the German-style education system was changed to conform to the ECTS because of the Bologna process. The existing academic degree granted with a diploma was transformed into a *baccalaureus* (bachelor’s degree). The universities usually award a bachelor’s degree after three years (following which, a master’s degree will be two years long) or four years (following which, a master’s degree will be one year long).

Netherlands

In the Netherlands, the Bachelor of Arts and Master of Arts degrees were introduced in 2002. Until that time, a single program that led to the *doctorandus* degree was in effect, which comprised the same course load as the bachelor’s and Master’s programs put together. (The *doctorandus* title was in use for almost all fields of study; other titles were used for legal studies (*meester*) and engineering (*ingenieur*.) Those who had already started the *doctorandus* program could, upon completing it, opt for the *doctorandus* degree (before their name, abbreviated to ‘drs.’), or simply use the master’s degree (behind their name) in accordance with the new standard. Since these graduates do not have a separate bachelor’s degree (which is in fact—in retrospect—incorporated into the program), the master’s degree is their first academic degree.

In 2003/2004, the Dutch degree system was changed because of the Bologna process. Former degrees included:

- *baccalaureus* (bc. for bachelor, corresponding to a B.A.Sc. or B.A.A. degree, it may be formally rendered as “B”, followed by the specialization field, instead of “bc.”)
- *doctorandus* (prefix abbreviated to drs.; it corresponds to M.A. or M.Sc., but it may be formally rendered as M instead of drs.),

ingenieur

- *ing.* for graduates of the four-year courses offered by Dutch higher vocational colleges (HBO, that is; *hoger beroepsonderwijs*), university of applied science. It is similar to a B.A.Sc., B.Eng., B.B.E., B.A.S. or B.I.C.T. (B.I.T.), and it may be formally rendered as B followed by the specialization field, instead of *ing.*
- *ir.* for those having graduated from technical university after a minimum of five years, corresponding to a M.Sc., but it may be formally rendered as M, instead of *ir.*),
- *meester in de rechten* (mr.; it corresponds to LL.M., but it may be formally rendered as M instead of mr.) and

- *doctor* (dr.; it corresponds to Ph.D., but it may formally be rendered as D instead of dr.) are still granted along with their international equivalents.

While the titles ing., bc., ir., mr., drs. and dr. are used before one's own name, the degrees B, M or D are mentioned after one's name. It is still allowed to use the traditional titles.

Whether a bachelor's degree is granted by a *hogeschool* or university is highly relevant since these parallel systems of higher education have traditionally served somewhat different purposes, with the vocational colleges mainly concentrating on skills and practical training. A B.A. or B.Sc. from a university grants 'immediate' entry into a master's program. Moreover, this is usually considered a formality to allow students to switch to foreign universities master's programs. Meanwhile, those having completed a HBO from a vocational college, which represented the highest possible level of vocational education available, can only continue to a "master's" on completion of a challenging year of additional study, which in itself can serve as a type of selection process, with the prospective M.Sc. students being required to cover a great deal of ground in a single year.

Recently, HBO (vocational) master's degrees have been introduced in the Netherlands. Graduates thereof may use neither the extension "of Arts" (M.A.) nor "of Science" (M.Sc.). They may use an M followed by the field of specialization (e.g., M.Des).

This year of study to "convert" from the vocational to academic (*WO-wetenschappelijk onderwijs*, literally "scientific education") is also known as a "bridge" or "premasters" year. Note that despite the use of the terminology "university of applied science" the higher vocational colleges are not considered to be "universities" within the Netherlands.

Important aspects of Dutch bachelor's degree courses (and others) relative to some of those offered abroad include:

- **Duration.** While in many countries courses are completed in a given time under normal circumstances, degree courses offered at some (though by no means all) Dutch institutions, including the most prestigious, can only be completed in three years by the best performing students.
- **Academic year.** The Dutch academic year has a formal duration of 42 weeks. In practice students are often expected and required to spend a great deal of the "free" time revising for examinations. This is not always true elsewhere, as in many countries a very long summer break is taken and/or examinations are before the winter break rather than after.
- **Learning curve.** Some education systems, notably the British one, involve a gentle introduction during the first year. This is generally not the case in the Netherlands, with the difficulty level in the first year serving as a type of "self-selection" with less committed and less able students routinely finding it difficult to keep up.

In February, 2011, the Dutch State Secretary of Education decided to adhere to the recommendations written in a report by the Veerman Commission. In the near future, the distinction between academic and higher vocational degrees will disappear.

Poland

In Poland, the licentiate degree corresponds to the bachelor's degree in Anglophone countries. In Polish, it is called *licencjat*. To obtain the licencjat degree, one must complete three years of study. There is also a similar degree called engineer (*Inżynier*) which differs from the licencjat in that it is awarded by technical universities and the program usually lasts for 3.5 years. After that, the student can continue education for 2 or 1.5 years, respectively, to obtain the Polish magisterium degree, which corresponds to a master's degree.

Portugal



A *licenciatura* (equivalent to a bachelor) degree diploma from Portugal



Another example of a Portuguese *licenciatura* degree diploma

Presently, the Portuguese equivalent of a bachelor's degree is the *licenciatura*, awarded after three years of study (four in some few cases) at an accredited university or polytechnical institution. It is an undergraduate first study cycle program which is required to advance into further studies such as master's degree programs.

Before the Bologna process (2006/2007), the *bacharelato* (bachelor's degree) existed in the Portuguese higher education system. It required three years of study, being roughly equivalent to the present *licenciatura*. At that time, the *licenciatura* referred to a licentiate's degree (equivalent to the present master's degree), which required usually five years of study. A *licenciatura* could also be obtained by performing two years of study after obtaining a *bacharelato*.

Today, the former and current *licenciatura* degrees are referred in Portugal, respectively, as pre-Bologna and post-Bologna *licenciaturas*.

Russia, Ukraine, and Armenia

The specialist's degree (Russian: специалист), (Ukrainian: спеціаліст) was the first academic distinction in the Soviet Union, awarded to students upon completion of five-year studies at the university level. The degree can be compared both to the bachelor's and master's degree. In the early 1990s, *Bakalavr* (Бакалавр, "bachelor") degrees were introduced in all the countries of the Commonwealth of Independent States except Turkmenistan. After the bakalavr degree (usually four years), one can earn a master's degree (another one or two years) while preserving the old five-year specialist scheme.

Spain

In Spain, due to the ongoing transition to a model compliant with the Bologna agreement, exact equivalents to the typical Anglo-Saxon bachelor's degree and master's degree are being implemented progressively. Currently, there is an undergraduate bachelor's degree called "Título de Grado" or simply "Grado" (its duration generally being four years), a postgraduate master's degree called "Título de Máster" or "Máster" (between one and two years), and a doctor's degree called "Título de Doctor" or "Doctorado". The "Título de Grado" is now the prerequisite to access to a Master study. The "Título de Máster" is now the prerequisite to access to doctoral studies, and its duration and the kind of institutions that can teach these programs are regulated in the framework of the European Higher Education Area.

Up until 2009/2010, the system was split into three categories of degrees. There were the so-called first-cycle degrees: "Diplomado" or "Ingeniero Técnico", with nominal durations varying between three and four years; there were also second-cycle degrees: "Licenciado" or "Ingeniero" with nominal durations varying between four and six years; and finally the third-cycle degrees: "Doctor." The official first-cycle degrees are comparable in terms of duration, scope, and educational outcomes to an Anglo-Saxon bachelor's degree. Meanwhile, the second-cycle degrees are comparable in terms of duration, scope, and educational outcomes to an Anglo-Saxon bachelor's + Master's degrees combination if compared with the Anglo-Saxon system. In this traditional system the access to doctoral studies was granted only to the holders of "Licenciado", "Ingeniero" or "Arquitecto" (second-cycle) degrees, and the "Master" or "Magister" titles were unregulated (so, there coexisted so-called "Master" programs with different durations, from some months to two years, backed by universities or centers without any official recognition) and only the reputation of the program/institution could back them.

Sweden

The Swedish equivalent of a bachelor's degree is called *kandidatexamen*. It is earned after three years of studies, of which at least a year and a half in the major subject. A thesis of at least 15 ECTS credits must be included in the degree. Previously, there was a Bachelor of Law degree (*juris kandidat*) which required 4.5 years of study, but this degree now has a new name, *juristexamen* ("law degree").

Switzerland

Like Austria and Germany, Switzerland did not have a tradition of bachelor's and master's degrees. In 2003, after the application of the Bologna process, bachelor's and graduate master's degrees

replaced the old degrees. As of 1 December 2005 the Rectors' Conference of the Swiss Universities granted holders of a *lizentiat* or diploma the right to use the corresponding *master* title. As of 2006, certificates of equivalence are issued by the university that issued the original degree. Currently three to four years of study are required to be awarded a bachelor's degree. A master's degree will require another two to three years of coursework and a thesis.

United Kingdom

The bachelor's degree is the standard undergraduate degree in the United Kingdom, with the most common degrees being the bachelor of arts (BA) and bachelor of science (BSc). Most bachelor's degree courses (apart from the very rare postgraduate awards, and those in medicine, dentistry and veterinary science) lead to honours degrees, with ordinary degrees generally only being awarded to those who do not meet the required pass mark for an honours degree. With the exception of the postgraduate bachelor's degrees and bachelor's degrees in medicine, dentistry and veterinary science, UK bachelor's degrees (whether honours or non-honours) are first cycle (end of cycle) qualifications under the Bologna Process. Postgraduate bachelor's degrees and bachelor's degrees in medicine, dentistry and veterinary science are second cycle (end of cycle) qualifications. Some bachelor's degrees in medicine, dentistry and veterinary science offer intercalated degrees en route to the final qualification.

Bachelor's degrees should not be confused with baccalaureate qualifications, which derive their name from the same root. In the UK, baccalaureate qualifications, e.g. International Baccalaureate, Welsh Baccalaureate, English Baccalaureate, are gained at secondary schools rather than being degree-level qualifications.

Until the 19th century, a bachelor's degree represented the first degree in a particular faculty, with Arts representing undergraduate study, thus the Bachelor of Civil Law (BCL) at Oxford and the Bachelor of Laws (LLB) at Cambridge, for example, were postgraduate degrees. Vestiges of this system still remain in the ancient universities, with Oxford and Cambridge awarding BAs for undergraduate degrees in both arts and sciences (although both award undergraduate BTh degrees through associated theological colleges, and Oxford awards BFA degrees in addition to the BA) and defining other bachelor's degrees (e.g. BPhil, BCL) as postgraduate awards equivalent to master's degrees, although many postgraduate bachelor's degrees have now been replaced by equivalent master's degrees (e.g. LLM for the LLB at Cambridge and MSc for the BSc at Oxford). The same historical usage of indicating an undergraduate degree by it being in the faculty of arts rather than being a bachelor's degree gives rise to the Oxbridge MA and the Scottish MA).

Common bachelor's degrees and abbreviations:

- Bachelor of Arts: BA
- Bachelor of Science: BSc
- Bachelor of Laws: LLB
- Bachelor of Civil Law: BCL
- Bachelor of Engineering: BEng

- Bachelor of Education: BEd
- Bachelor of Medicine, Bachelor of Surgery: MBBS, MBChB, BMBS, BMBCh
- Bachelor of Dental Surgery: BDS

England, Wales and Northern Ireland

In England, Wales and Northern Ireland, bachelor's degrees normally take three years of study to complete, although courses may take four years where they include a year abroad or a placement year. Degrees may have titles related to their broad subject area or faculty, such as BA or BSc, or may be more subject specific, e.g. BEng or LLB. The majority of bachelor's degrees are now honours degrees, although this has not always been the case historically.

Although first degree courses are usually three years (360 credits), direct second year entry is sometimes possible for students transferring from other courses or who have completed foundation degrees, via accreditation of prior learning or more formal credit transfer arrangements. Some universities compress the three-year course into two years by teaching for a full calendar year (180 credits) rather than a standard academic year (120 credits), thus maintaining the full 360-credit size of the course.

In addition to bachelor's degrees, some institutions offer integrated master's degrees as first degrees in some subjects (particularly in STEM fields). These integrate teaching at bachelor's and master's level on a four-year (five-year if with industrial experience) course, which often shares the first two years with the equivalent bachelor's course.

The normal academic standard for bachelor's degrees in England, Wales and Northern Ireland is the *honours degree*. These are normally classified in one of four classes of honours, depending upon the marks gained in examinations and other assessments: first class, upper second class (2:1), lower second class (2:2), or third class; some institutions have announced that they intend to replace this system of classifying honours degrees with an American-style Grade Point Average. An *ordinary* (or *unclassified*) degree, which only requires passes worth 300 credits rather than the 360 of the honours degree, may be awarded if a student has completed the full honours degree course but has not obtained sufficient passes to earn a degree. Completion of just the first two years of the course can lead to a Diploma of Higher Education and completion of only the first year to a Certificate of Higher Education.

On the Framework for Higher Education Qualifications, standard undergraduate bachelor's degrees with and without honours are at level 6, although the courses include learning across levels 4 to 6. Honours degrees normally require 360 credits with a minimum of 90 at level 6, while ordinary degrees need 300 credits with a minimum of 60 at level 6. Bachelor's degrees in medicine, dentistry and veterinary science are at level 7, with learning spanning levels 4 to 7, and are not normally credit rated. The Diploma of Higher Education is a level 5 (first year of bachelor's degree) qualification and requires 240 credits, a minimum of 90 at level 5; The Certificate of Higher Education is a level 4 (second year of bachelor's degree) qualification and requires 120 credits, a minimum of 90 at level 4.

Other qualifications at level 6 of the Framework for Higher Education Qualifications or the Regulated Qualifications Framework, such as graduate diplomas and certificates, some BTEC Advanced

Professional awards, diplomas and certificates, and the graduateship of the City & Guilds of London Institute are at the same level as bachelor's degrees, although not necessarily representing the same credit volume.

Scotland

At Scottish universities, bachelor's degrees (and the equivalent Scottish MA awarded by some institutions) are normally *honours degrees*, taking four years of study (or five with a year abroad or in industry), but may also be *ordinary degrees* (also known as *pass*, *general* or *designated degrees*) requiring three year of study. Honours degrees may be awarded as BA (Hons) or MA (Hons) in the arts and social sciences, or BSc (Hons) for sciences, or have more specific titles such as BEng. As in the rest of the UK, integrated master's degrees, taking five years in Scotland, are also offered as first degrees alongside bachelor's degrees.

An honours degree may be directly linked to professional or vocational qualifications, particularly in fields such as engineering, surveying and architecture. These courses tend to have highly specified curricula, leaving students without many options for broader study. Others, following a more traditional route, start off with a broad range of studies across the faculty that has admitted the student or, via modular study, across the whole university. Students on these courses specialise later in their degree programmes. Typically degree grades are based only on the final two years of study, after a specialisation has been chosen, so broader study courses taken in the first two years do not affect the final degree grade.

Honours degrees are subdivided into classes in the same way as the rest of the UK, depending on the overall grade achieved. These are, from highest to lowest; first class, upper second class (2:1), lower second class (2:2), and third class.

Ordinary degrees are awarded to students who have completed three years at university studying a variety of related subjects. These may be taken over a broad range of subjects or (as with honours degrees) with a specialisation in a particular subject (in the latter case, they are sometimes known as *designated degrees*). As ordinary degrees in Scotland constitute a distinct course of study, rather than a grade below honours degrees, they can be graded (from lowest to highest) as "pass", "merit" or "distinction". As in the rest of the UK, Certificates and Diplomas of Higher Education may be earned by those completing one and two years of a bachelor's degree course respectively.

The first two years, sometimes three, of both an ordinary degree and an honours degree are identical, but candidates for the ordinary degree study in less depth in their final year and often over a wider variety of subjects, and do not usually complete a dissertation. A Scottish ordinary degree is thus different from ordinary degrees in the rest of the UK in comprising a distinct course of study from the honours degree. In keeping with the Scottish "broad education" philosophy, ordinary degrees (and more rarely honours ones) may mix different disciplines such as sciences and humanities taught in different faculties and in some cases even different universities.

Bachelor's degrees with honours are at level 10 of the Scottish Credit and Qualifications Framework (SCQF) and require 480 credits with a minimum of 90 at level 10 and 90 at level 9. Ordinary degrees are at level 9 and require 360 credits with a minimum of 90 at level 9. Both honours de-

degrees and ordinary degrees qualify as first cycle (end of cycle) qualifications in the Bologna Process. Bachelor's degrees in medicine, dentistry and veterinary science are at level 11 of the SCQF and are second cycle (end of cycle) qualifications in the Bologna Process.

Turkey

Bachelor's degrees exist in almost every city in Turkey. Mostly preferred universities of Turkey are Middle East Technical University, Boğaziçi University, Sabanci University, Koc University, Hacettepe University, Ankara University, Istanbul Technical University, Istanbul University, Yildiz Technical University, Bilkent University, Koç University, by B.A. students. They all grants Bachelor of Arts or Bachelor of Science degrees upon completion of eight-semester programs offered by its faculties and the School of Foreign Languages. Also double-major is available in those universities. Some universities offer the opportunity for ordinary degree students to transfer to an honours degree course in the same subject if an acceptable standard is reached after the first or second year of study. It is called in Turkish "Lisans Mezunu."

While some of the public and private universities are offering 30% English in their programs, there are also many universities which offer 100% English language in the programs such as Middle East Technical University, Sabanci University, and Boğaziçi University.

Types

Many other specialized bachelor's degrees are offered as well. Some are in very specialized areas, like the five-year B.I.Des. or B.Sc.I.Des. degree in industrial design. Others are offered only at a limited number of universities, such as the Walsh School of Foreign Service at Georgetown University's Bachelor of Science in Foreign Service (B.Sc.F.S.). The University of Delaware offers a Bachelor of Applied Arts and Science (B.A.A.Sc.) degree, a degree which often indicates an interdisciplinary course of study for many majors within its School of Arts and Science. Stanford University's Bachelor of Arts and Science degree is for students who are receiving one degree but who have completed two arts and sciences majors, one of which would ordinarily lead to the B.A. and one of which would ordinarily lead to the B.Sc.

At many institutions one can only complete a two-degree program if the bachelor's degrees to be earned are of different types (e.g., one could earn a B.A. in philosophy and a B.Sc.C.Eng. in chemical engineering simultaneously, but a person studying philosophy and English would receive only a single B.A. with the two majors). Rules on this vary considerably, however.

Agriculture

The Bachelor of Science in Agriculture [B.Sc. (Ag) or B.Sc. (Hons.) Agriculture] offers a broad training in the sciences. The focus of this four-year applied degree is on the development of analytical, quantitative, computing and communication skills. Students learn how to apply the knowledge and principles of science to the understanding and management of the production, processing and marketing of agricultural products, and to the management and conservation of our natural resources. All students undertake rural field trips and approved professional experience within agricultural or horticultural enterprises, natural resource management, agribusiness industries, or commercial or government organisations active in the field.

Architecture and Design

The Bachelor of Architecture (B.Arch.) degree is a professional degree awarded to students who complete the five-year course of study in the field at some universities. Many universities offer a B.Sc. or B.A. (majoring in Architecture) after the first three or four years, and then a post-graduate diploma, B.Arch. or M.Arch. for the following two to four years.

The Bachelor of Design (B.Des., or S.Des. in Indonesia) is awarded to those who complete the four- or four-and-a-half-year course of study in design, usually majoring in a specific field of design, such as interior design or graphic design.

Arts

The Bachelor of Arts degrees (B.A., A.B.; also known as *Artium Baccalaureus*) along with the Bachelor of Science degrees are the most common undergraduate degrees given. Originally, in the universities of Oxford, Cambridge and Dublin, all undergraduate degrees were in the faculty of arts, hence the name of the degree. The Bachelor of Applied Arts and Sciences (B.A.A.Sc.) is an undergraduate degree that bridges academic and work-life experiences.

Engineering

- The Bachelor of Engineering (*Baccalaureus in Arte Ingeniaria*) degree or Bachelor of Applied Science degree is a professional degree awarded to students who have completed the three- or four-year course of study in engineering. Common abbreviations include B.Eng., B.Sc.Eng., B.A.Sc., B.Tech., AMIE, and GrADIENTE. The B.A.I. (*baccalaureus in arte ingeniaria*) is awarded by the University of Dublin (Trinity College Dublin); some South African universities refer to their engineering degrees as B.Ing. (*Baccalaureus Ingeniaria*).
- There are more specific variants for many subfields, such as the B.Sc.E.Eng. degree (Bachelor of Science in Electrical Engineering). The B.Sc.Eng. and B.S.Eng (Bachelor of Software Engineering) are awarded by the University of Waterloo, McMaster University, and University of Victoria, respectively. In India the Bachelor of Engineering, Bachelor of Technology, and AMIE (Association of Membership of Institution of Engineers) are professional degrees awarded in specific engineering disciplines such as computers, electrical, electronics, mechanical, communication, civil, plastics, chemical, etc. Specialization is referred to in brackets (e.g., “BE (computers)”).
- The Bachelor of Science in Engineering Technology degree (B.Sc.Eng.Tech.) is a professional degree awarded to students who have completed a four-year course of study in engineering technology. There are variants including general engineering technology, mechanical engineering technology, electrical engineering technology, and civil engineering technology. Some of these variants even have optional areas of concentration within them. For instance mechanical engineering technology could include mechanical systems design, manufacturing systems, marine engineering technology, and others. Engineering technology degrees usually lead to licensing as engineering technologists requiring further studies for licensing as professional engineers.

Business and Management

Computer Science and Information Systems

There are various undergraduate degrees in information technology incorporating programming, database design, software engineering, networks and information systems. These programs prepare graduates for further postgraduate research degrees or for employment in a variety of roles in the information technology industry. The program focus may be on the technical or theoretical aspects of the subject matter, depending on which course is taken.

- Theoretically oriented degrees focus on computer science and are correspondingly titled. These include the Bachelor of Computing (B.Comp.) and Bachelor of Computer Science (B.Comp.Sc.) degrees. Computer science is also offered as a major within most Bachelor of Science programs.
- The practically oriented degrees cover many disciplines from within the IT industry including software engineering, information systems, and data communications. Examples here include the Bachelor of Science in Information Technology (B.Sc.I.T.), the Bachelor of Computer Applications (B.C.A.), the Bachelor of Information Technology, and the Bachelor of Applied Science (Information Technology) (B.A.Sc.I.T.) degrees. Many of the disciplines taught as part of these degrees are covered under other degrees, such as engineering, as well.
- Degrees combining IT with business study are also offered at many universities. Specialized programs in information systems—such as the bachelor of business information systems (BBIS) program—are often positioned as professionally oriented degrees. More general degrees here would include business degrees, such as the B.B.A. or B.Com., with information systems as a concentration.

Health Care

Medicine

In countries following British tradition, (the University of Malta is an exception) medical students pursue an undergraduate medical education and receive bachelor's degrees in medicine and surgery (M.B.B.Chir., M.B.B.S., B.M.B.S., B.M., M.B.Ch.B., etc.). This was historically taken at the universities of Oxford, Cambridge, and Dublin after the initial B.A. degree, and in Oxford, Cambridge, and Dublin the B.A. is still awarded for the initial three years of medical study, with the B.M.B.Ch., M.B.B.Chi., or M.B.B.Ch.B.A.O., respectively, being awarded for the subsequent clinical stage of training. Some British universities give a bachelor's degree in science, or medical science, midway through the medical course, and most allow students to intercalate a year of more specialized study for an intercalated Bachelor of Science (B.Sc.), Bachelor of Medical Science (B.Med.Sc.), or Bachelor of Medical Biology (B.Med.Biol.) degree with honors. Although notionally M.B. and B.Sc. are two degrees, they must be taken together, and by convention entitle the bearer to use the title of *doctor*. In some Irish universities, a third degree, Bachelor of Arts in Obstetrics (B.A.O.), is added. However, this third degree is an anachronism from the 19th century and is not registerable with the Irish Medical Council. The nonuniversity (licentiate) qualifications allowing registration as a medical practitioner in the UK, a registration that has not been granted by the United Examining Board since 1999, also conferred the courtesy title of “doctor.”

Dentistry

Dentistry is offered both as an undergraduate and a postgraduate course. The doctorate of dental surgery (DDS) is the usual undergraduate program. Postgraduate courses such as the Bachelor of Dentistry (B.Dent.)—awarded exclusively by the University of Sydney in Australia—requires a previous bachelor's degree.

Midwifery

The Bachelor of Midwifery degree is a professional degree awarded to students who have complete a three- to five-year (depending on the country) course of study in midwifery. Common abbreviations include B.Sc.Mid, B.Mid, B.H.Sc.Mid.

Physiotherapy

Physiotherapy is offered both as an undergraduate and a graduate course of study. Studies leading to the Bachelor of Physiotherapy (B.P.T.) degree usually constitute the undergraduate program. In the graduate program, courses leading to a degree such as the Master of Physiotherapy degree are offered.

In the Canadian province of Quebec, French universities offer both undergraduate and graduate courses leading to the obtention of a Bachelor of Science degree with a major in physiotherapy and a Master of Science degree specialized in physiotherapy. McGill University, the Université de Montréal, and the Université de Sherbrooke are among the post-secondary institutions that offer such programs.

Optometry

Optometry is a four-year or five-year course. Although students graduate with a B.Sc. after three years of study, passing a further supervised preregistration year is required to become a fully qualified optometrist. The National Institute of Ophthalmic Sciences is among the post-secondary institutions that offer such programs. It is the academic arm of The Tun Hussein Onn National Eye Hospital and the only eye hospital based institution in Malaysia.

Nursing

The Bachelor of Nursing degree is a three- to five-year undergraduate degree that prepares students for a career in nursing. Often the degree is required to gain “registered nurse”, or equivalent, status—subject to completion of exams in the area of residence. Sometimes, though, the degree is offered only to nurses who are already registered. Alternate titles include Bachelor of Science in Nursing and Bachelor of Nursing Science, with abbreviations B.Sc.N., B.N.Sc.

Veterinary Science

The Bachelor of Veterinary Science program is generally a five-year course of study that is required for becoming a veterinarian. It is also known as the Bachelor of Veterinary Medicine and Surgery at some universities (B.V.M.S.). In the United States a degree in veterinary medicine is completed after a bachelor's has been earned (usually in four years). The recipient is called “doctor,” as is a

medical doctor who treats human beings, and the training lasts as long as the training of a medical doctor, does, usually four years. Thus it takes eight years, usually, after high school, to become a veterinarian. Admission to veterinary training programs is considered at least as competitive as for medical school, in fact, it is generally found to be more competitive. No bachelor's degree of veterinary science is given in the United States, only the Doctor of Veterinary Medicine (D.V.M.) degree is.

Pharmacy

The Bachelor of Pharmacy (B.Pharm.) degree is a common undergraduate degree for the practice of pharmacy. In the United States, Canada, and France, however, all colleges of pharmacy have now phased out the degree in favor of the Pharm.D., or doctor of pharmacy, degree or the Ph.D., doctor of philosophy, degree in pharmacy. Some universities, such as the University of Mississippi, award a Bachelor of Science in pharmaceutical sciences (B.Sc.P.Sc.) degree as a part of the seven-year Pharm.D. program after the completion of the first four years. However, the B.Sc.P.Sc. degree does not qualify the recipient for the practice of pharmacy, for which it is required that students earn a Pharm.D. degree.

Public Health

Public health is usually studied at the master's degree level. The Bachelor of Science in Public Health (B.Sc.P.H.) degree is a four-year undergraduate degree that prepares students for careers in the public, private, or nonprofit sectors in areas such as public health, environmental health, health administration, epidemiology, or health policy and planning.

Medical and Health Sciences

- The Bachelor of Health Science (B.H.Sc.) is a specialized degree awarded to students whose studies have focused on health care or the health sciences. Specific areas of study can include nursing, radiography, health care management, and other allied health fields. The degree is typically awarded following four to five years of collegiate study.
- The title B.Med.Sc., B.Bio.Med.Sc., B.Med.Sc. or B.V.Med.Sc. is granted to students who have qualified in the field of biomedical science and medical science or veterinary medical science respectively. Universities that offer this course include the University of Western Ontario in Canada, University of Birmingham in the UK and the University of New South Wales, the University of Canberra, the University of Queensland, the University of Sydney, RMIT University, Flinders University, Griffith University, Monash University, Australian National University and the University of Melbourne in Australia.
- The degree of B.Med.Sc. can be awarded for students completing an intercalated degree whilst studying medicine as an intermediate award. The degree of B.Med.Sc. may also be awarded to an individual who, having followed the prescribed course of study for the degrees of M.B.Ch.B., does not complete the undergraduate clinical training. In brief, this is normally awarded after the candidate has completed successfully the first three years of an undergraduate medical degree at certain UK (and Commonwealth) medical institutions.
- The Bachelor of Science in human biology degree is awarded by several universities around

the world and focuses on biomedical research, health care, biotech business, pharmaceutical sciences, or a combination thereof.

Kinesiology

The Bachelor of Kinesiology degree (B.K. or B.Sc.K.) is a specialized degree in the field of human movement and kinetics. Some schools still offer it under the aegis of a School of Physical Education (B.P.Ed. or B.H.P.Ed.), although “kinesiology” or “human kinetics” is currently the more popularly accepted term for the discipline.

Nutrition and Dietetics

Bachelor of Science in Nutrition and Dietetics (B.S.N.D.), Bachelor of Food Science and Nutrition (B.F.S.N.) Specific areas of study include clinical nutrition, food technology, hospitality and services management, research, community worker, health care management, educator, sports science, agricultural sciences, private practice and other allied health fields. The degree is awarded following four to six years of collegiate study in America (average five years), from three to four in Europe and Australia. In America (especially Latin America) Nutrition per se is separated from Dietetics, where the latter is equivalent to a technical degree.

Aviation

The Bachelor of Aviation (B.Av.) is awarded to students who complete a four-year course of study in the field of aviation.

Divinity and Theology

The Bachelor of Divinity, Bachelor of Theology, Bachelor of Religious Studies, Bachelor of Biblical Studies, and Bachelor of Religious Education (B.D., B.Th., B.R.S., B.B.S., and B.R.E.) degrees are awarded on completion of a program of study of divinity or related disciplines, such as theology, religious studies, or religious education.

Traditionally the B.D. was in fact a graduate degree rather than a first degree, and typically emphasised academic theology, biblical languages etc. This has become a less common arrangement, but should be noted since, for example, a B.D. takes precedence over a Ph.D. in Cambridge University's order of seniority.

While the theological bachelor's degree is generally conferred upon completion of a four-year program, it is also conferred in some specialized three-year programs. From there, the next level of advancement is generally the Master of Divinity (M.Div.), Master of Theology (Th.M.), Master of Religious Studies, or Master of Religious Education (M.R.E.) degree. In the United States the “main line” Protestant clergy typically take a four-year bachelor's degree in whatever field they choose, then earn the M.Div. (Master of Divinity) degree in an additional three years as part of preparation for ordination.

Fine Arts

The Bachelor of Fine Arts (B.F.A.) degree is a specialized degree awarded for courses of study in

the fine and/or performing arts, frequently by an arts school or conservatory, although it is equally available at a significant number of traditional colleges and universities. In contrast to the B.A. or B.S., which are generally considered to be academic degrees, the B.F.A. is usually referred to as a professional degree, whose recipients have generally received four years of study and training in their major field as compared to the two years of study in the major field usually found in most traditional non-Commonwealth Bachelor of Arts or Bachelor of Science programs.

In the United States, the Bachelor of Fine Arts degree differs from a Bachelor of Arts degree in that the majority of the program consists of a practical studio component, as contrasted with lecture and discussion classes. A typical B.F.A. program in the United States consists of two-thirds study in the arts, with one-third in more general liberal arts studies. For a B.A. in Art, the ratio might be reversed.

Film and Television

The Bachelor of Film and Television (B.F.T.V.) degree is an undergraduate degree for the study of film and/or television production including areas of cinematography, directing, scriptwriting, sound, animation, and typography.

Integrated Studies

The Bachelor of Integrated Studies (B.I.S.) is an interdisciplinary bachelor's degree offered by several universities in the United States and Canada. It allows students to design a customized and specific course of study to best suit their educational and professional objectives. Generally, this degree is sponsored by two or more departments within the university. Schools which confer the B.I.S. degree include the University of Manitoba, Pittsburg State University, University of South Carolina Upstate, Weber State University, Ferris State University, Arizona State University, University of Minnesota, Miami University (Ohio), the University of Virginia, the University of New Brunswick, and Tallinn University of Technology amongst others.

Journalism

The Bachelor of Journalism (B.A.J. or B.Sc.J.) degree is a professional degree awarded to students who have studied journalism at a four-year accredited university. Not all universities, however, grant this degree. In the United States, schools tend to offer the B.A. or B.S. with a major in journalism instead. The world's oldest school of journalism at the University of Missouri offers a B.J. degree, not to be confused with the bachelor's degree in jurisprudence at Oxford University. In South Africa, Rhodes University has the oldest school of journalism in Africa and allows students to take a fourth-year specialisation to raise their B.A. to B.A.J. status, equivalent to a B.A. (Hons).

Landscape Architecture

The Bachelor of Landscape Architecture (B.L.Arch.) degree is awarded to students who complete the five- (in some countries four-) year course of study in the field.

Liberal Arts

The Bachelor of Liberal Arts, Bachelor of General Studies, Bachelor of Liberal Studies, Bache-

lor of Science in general studies, or Bachelor of Applied Studies (B.L.A., B.G.S., B.L.S., B.Sc.G.S., B.A.S.) degree is sometimes awarded to students who major in the liberal arts, in general, or in interdisciplinary studies. The Bachelor of Professional Studies is awarded to students who major in professional career studies.

Library Science

The Bachelor of Library Science or Bachelor of Library and Information Science (B.L.Sc., B.L.I.Sc.) degree is sometimes awarded to students who major in library science, although Master's of library science degrees are more common.

Music

The Bachelor of Music (B.Mus.) degree is a professional or academic undergraduate degree in music at most conservatories in the US and the UK. It is also commonly awarded at schools of music in large private or public universities. Areas of study typically include music performance, music education, music therapy, music composition, academic fields (music history/musicology, music theory, ethnomusicology), and may include jazz, commercial music, recording technology, sacred music/music ministry, or music business. Small liberal arts colleges and universities with-out schools of music often award only B.A. in music, with different sets of requirements.

Mortuary Science

The Bachelor of Mortuary Science (B.M.S.) is a professional undergraduate degree, awarded by the Cincinnati College of Mortuary Science of Cincinnati, Ohio and Southern Illinois University Carbondale. It was introduced in 1986 and it is awarded to students that complete 120 semester hours of course work and receive passing scores on the National Board Exam administered by The International Conference of Funeral Service Examining Boards.

Philosophy

The Bachelor of Philosophy (B.Phil. or Ph.B.) degree is either an undergraduate or graduate degree. Generally, it entails independent research or a thesis/capstone project.

Psychology

The Bachelor of Arts or Science in Psychology (B.A.Psy., B.Sc.Psy., B.Psych., or Psy.B.) degree is a degree awarded to students who have completed a course of study in the field of psychology. Courses typically last five years, but may last as long as six. In Nepal, there are three- and four-year courses available for higher-level students.

Education

The Bachelor of Education degree (B.Ed.) is a four-year undergraduate professional degree offered by many American colleges and universities for those preparing to be licensed as teachers.

Variants include the B.Ed., B.A.Ed, B.A.T. (Bachelor of Arts for Teaching), and B.S.T. degrees. Preparation for the M.S. in education, this degree is most often received by those interested in early childhood, elementary level, and special education, or by those planning to be school administrators. Secondary level teachers often major in their subject area instead (i.e., history, chemistry, or mathematics), with a minor in education. Some states require elementary teachers to choose a subject major as well, and minor in education.

In Canada, the bachelor of education is a two-year professional degree in which students will specialise in either elementary or secondary education, and that is taken after the completion of a three or four year bachelor's degree with a major in a teachable subject, such as English, French, Mathematics, Biology, Chemistry, or a social science. Some universities also offer concurrent, five year programs with student completing both a bachelor's degree in arts or science as well as their B.Ed. The possession of a B.Ed. and a second bachelor's degree is required to teach in most public anglophone and francophone schools in Canada. The B.Ed. prepares teachers for completion of either M.A. (master's of arts) programs in education, M.Ed. (masters of education) programs, or post graduate certificates in education.

Science With Education

The Bachelor of Science and/with Education degree (B.Sc.Ed.) is a degree awarded to students who complete the four- to five-year course of study in the field of science (major and minor in General Biology, Chemistry, Physics, and Mathematics) and education. Although notionally B.Sc. and B.Ed. are two degrees, they must be taken together. The graduates will work as science (physics, chemistry, biology) teachers in high schools, as lecturers in pre university colleges and matriculation centers and can progress to postgraduate programs (M.Sc. and Ph.D.) in various areas in science or education.

Forestry

The Bachelor of Science in Forestry (B.Sc.F.) is a degree awarded to students who complete the four-year course of study in the field of forestry.

Science

The Bachelor of Science degrees (B.Sc., Sc.B.) along with the Bachelor of Arts degrees are the most common undergraduate degrees given. The Bachelor of Applied Arts and Sciences (B.A.A.Sc.) is an undergraduate degree that bridges academic and work-life experiences.

Science in Law

The Bachelor of Science in Law degree (B.Sc.L.) is a special-purpose degree that allows someone who has had some prior studies but has not achieved a bachelor's degree to resume his or her education and take up the study of law with the goal of eventually receiving the juris doctor degree.

Social Sciences

The Bachelor of Social Science (B.S.Sc.) is a three- or four-year undergraduate British degree that

enables students to specialize in the area of social science. Compared to the Bachelor of Arts, which allows students to study a vast range of disciplines, the Bachelor of Social Science enables students to develop more central and specialized knowledge of the social sciences. Many universities place the Bachelor of Social Science between the Bachelor of Arts and Bachelor of Science undergraduate degrees.

Social Work

The Bachelor of Social Work (B.S.W.) degree is a four-year undergraduate degree. Usually the first two years consist of liberal arts courses and the last two years focus on social work classes in human development, policy/law, research, and practice. Programs accredited by the Council on Social Work Education require B.S.W. students to complete a minimum of 400 field education or internship hours. Accredited B.S.W. programs often allow students who are interested in obtaining a Master of Social Work degree to complete the degree in a shorter amount of time or waive courses. In Latin America this is a four to five year degree that can replace liberal arts subjects into health sciences, resulting in social work as a type of community psychology and socioeconomic studies, focused in hospitals, prisons or pedagogy, among others.

Technology

The Bachelor of Technology degree (B.Tech) is a three- or four-year undergraduate degree. Generally, the program is comparable to a Bachelor of Science degree program, which is additionally supplemented by either occupational placements (supervised practical or internships) or practice-based classroom courses.

Law

The Bachelor of Laws (LL.B.) is the principal academic degree in law in most common law countries other than the United States, and anglophone Canada, where it has been superseded by the juris doctor (J.D.) degree.

Talmudic Law

The Bachelor of Talmudic Law degree (B.T.L.) is the degree awarded in most Yeshivas around the United States.

Tourism Studies

The Bachelor of Tourism Studies (B.T.S.) degree is awarded to those who complete the four- or five-year course of study in tourism, laws regarding tourism, planning and development, marketing, economics, sociology, anthropology, arts and world history (dependent on the country in which one takes the course), ticketing, hospitality, computer applications, and much more. The course would have an interdisciplinary approach with a vast range of units so the tourismologist professional would be able to identify necessary actions toward a sustainable touristic environment focus on local community uniqueness, values and traditions. As tourism is a growing industry, in India there is a lot of opportunity for those who complete this course of study. It is available in select universities of India.

Mathematics

The Bachelor of Mathematics or Bachelor of Mathematical Sciences degree (B.Math. and B.Math. Sc.) is given at the conclusion of a four-year honors program or a three-year general program. Several universities, mostly in Canada and Australia, award such degrees. The usual degree for mathematics in all other countries is the B.Sc.

Urban and Regional Planning

The Bachelor of Urban and Regional Planning or Bachelor of Urban Planning or just Bachelor of Planning degree (B.U.R.P., B.U.P., or B.Plan) is a degree offered at some institutions as a four or five-year professional undergraduate degree in urban planning. Programs vary in their focus on studio work and may or may not involve professional practice.

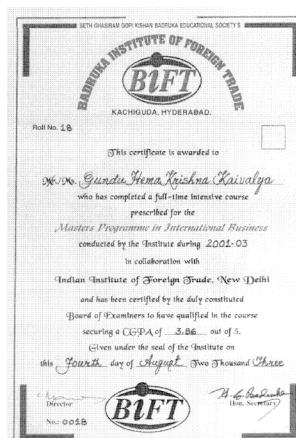
Public Affairs and Policy Management

The Bachelor of Public Affairs and Policy Management degree (B.P.A.P.Mgt.) is a specialized four-year honors degree dedicated to the study of public policy within an interdisciplinary framework. The degree was created as a direct response to the changing nature of civic society and the growing need for university graduates who can work effectively in the new policy environment.

Innovation

The Bachelor of Innovation is a four-year degree in a range of different fields. The major fields, in engineering business, arts, science or education, are similar to their associated B.A. or B.Sc. degrees. The general education elements are restructured to provide a common core of innovation, entrepreneurship and team skills. The degree was created as a direct response to the increasing pace of innovation in today's society and the need for graduates that understanding effective teaming, as well as the innovation process.

Master's Degree



An English-language master's degree diploma from India.

A master's degree (from Latin *magister*) is a second-cycle academic degree awarded by universities upon completion of a course of study demonstrating mastery or a high-order overview of a specific field of study or area of professional practice. A master's degree normally requires previous study at the bachelor's level, either as a separate degree or as part of an integrated course. Within the area studied, master's graduates are expected to possess advanced knowledge of a specialized body of theoretical and applied topics; high order skills in analysis, critical evaluation, or professional application; and the ability to solve complex problems and think rigorously and independently.

Historical Development

Medieval Era to 18th Century

The master's degree dates back to the origin of European universities, with a Papal bull of 1233 decreeing that anyone admitted to the mastership in the University of Toulouse should be allowed to teach freely in any other university. The original meaning of the master's degree was thus that someone who had been admitted to the rank (degree) of master (i.e. teacher) in one university should be admitted to the same rank in other universities. This gradually became formalised as the *licentia docendi* (licence to teach). Originally, masters and doctors were not distinguished, but by the 15th century it had become customary in the English universities to refer to the teachers in the lower faculties (arts and grammar) as masters and those in the higher faculties as doctors. Initially, the Bachelor of Arts (BA) was awarded for the study of the trivium and the Master of Arts (MA) for the study of the quadrivium.

Nineteenth Century

The nineteenth century saw a great expansion in the variety of master's degrees offered. At the start of the century, the only master's degree was the MA, and this was normally awarded without any further study or examination. The Master in Surgery degree was introduced by the University of Glasgow in 1815. By 1861 this had been adopted throughout Scotland as well as by Cambridge and Durham in England and the University of Dublin in Ireland. When the Philadelphia College of Surgeons was established in 1870, it too conferred the Master of Surgery, "the same as that in Europe".

From late medieval times until the nineteenth century, the pattern of degrees was therefore to have a bachelor's and master's degree in the lower (undergraduate) faculties and to have bachelor's and doctorates in the higher (postgraduate) faculties. In the United States, the first master's degrees (*Magister Artium*, or Master of Arts) were awarded at Harvard University soon after its foundation. In Scotland the pre-Reformation universities (St Andrews, Glasgow and Aberdeen) developed so that the Scottish MA became their first degree, while in Oxford, Cambridge and Trinity College, Dublin, the MA was awarded to BA graduates of a certain standing without further examination from the late seventeenth century, its main purpose being to confer full membership of the university. At Harvard the 1700 regulations required that candidates for the master's degree had to pass a public examination, but by 1835 this was awarded Oxbridge-style 3 years after the BA.

In Scotland, Edinburgh maintained separate BA and MA degrees until the mid nineteenth century, although there were major doubts as to the quality of the Scottish degrees of this period. In 1832 Lord Brougham, the Lord Chancellor and an alumnus of the University of Edinburgh, told the House of Lords that "In England the Universities conferred degrees after a considerable period

of residence, after much labour performed, and if they were not in all respects so rigorous as the statutes of the Universities required, nevertheless it could not be said, that Masters of Arts were created at Oxford and Cambridge as they were in Scotland, without any residence, or without some kind of examination. In Scotland all the statutes of the Universities which enforced conditions on the grant of degrees were a dead letter.”

It was not until 1837 that separate examinations were reintroduced for the MA in England, at the newly established Durham University (even though, as in the ancient English universities, this was to confer full membership), to be followed in 1840 by the similarly new University of London, which was only empowered by its charter to grant degrees by examination. However, by the middle of the century the MA as an examined second degree was again under threat, with Durham moving to awarding it automatically to those who gained honours in the BA in 1857, along the lines of the Oxbridge MA, and Edinburgh following the other Scottish universities in awarding the MA as its first degree, in place of the BA, from 1858. At the same time, new universities were being established around the then British Empire along the lines of London, including examinations for the MA: the University of Sydney in Australia and the Queen’s University of Ireland in 1850, and the Universities of Bombay (now the University of Mumbai), Madras and Calcutta in India in 1857.

In the US, the revival of master’s degrees as an examined qualification began in 1856 at the University of North Carolina, followed by the University of Michigan in 1859, although the idea of a master’s degree as an earned second degree was not well established until the 1870s, alongside the PhD as the terminal degree. Sometimes it was possible to earn an MA either by examination or by seniority in the same institution, e.g. in Michigan the “in course” MA was introduced in 1848 and was last awarded in 1882, while the “on examination” MA was introduced in 1859.

Probably the most important master’s degree introduced in the 19th century was the Master of Science (MS in the US, MSc in the UK). At the University of Michigan this was introduced in two forms in 1858: “in course”, first awarded in 1859, and “on examination”, first awarded in 1862. The “in course” MS was last awarded in 1876. In Britain, however, the degree took a while longer to arrive. When London introduced its Faculty of Sciences in 1858, the University was granted a new charter giving it the power “to confer the several Degrees of Bachelor, Master, and Doctor, in Arts, Laws, Science, Medicine, Music”, but the degrees it awarded in science were the Bachelor of Science and the Doctor of Science. The same two degrees, again omitting the master’s, were awarded at Edinburgh, despite the MA being the standard undergraduate degree for Arts in Scotland. In 1862, a Royal Commission suggested that Durham should award master’s degrees in theology and science (interestingly with the suggested abbreviations MT and MS, contrary to later British practice of using MTh or MTheol and MSc for these degrees), but its recommendations were not enacted. In 1877, Oxford introduced the Master of Natural Science, along with the Bachelor of Natural Science, to stand alongside the MA and BA degrees and be awarded to students who took their degrees in the honours school of natural sciences. In 1879 a statute to actually establish the faculty of Natural Sciences at Oxford was promulgated, but in 1880 a proposal to rename the degree as a Master of Science was rejected along with a proposal to grant Masters of Natural Sciences a Master of Arts degree, in order to make them full members of the University. This scheme would appear to have then been quietly dropped, with Oxford going on to award BAs and MAs in science.

The Master of Science (MSc) degree was finally introduced in Britain in 1878 at Durham, followed

by the new Victoria University in 1881. At the Victoria University both the MA and MSc followed the lead of Durham's MA in requiring a further examination for those with an ordinary bachelor's degree but not for those with an honours degree.

The Bologna declaration in 1999 started the Bologna Process, leading to the creation of the European Higher Education Area (EHEA). This established a three-cycle bachelor's—master's—doctorate classification of degrees, leading to the adoption of master's degrees across the continent, often replacing older long-cycle qualifications such as the magister degree in Germany. As the process continued, descriptors were introduced for all three levels in 2004, and ECTS credit guidelines were developed. This led to questions as to the status of the integrated master's degrees and one-year master's degrees in the UK. However, the Framework for Higher Education Qualifications in England, Wales and Northern Ireland and the Framework for Qualifications of Higher Education Institutes in Scotland have both been aligned with the overarching framework for the EHEA with these being accepted as master's-level qualifications.

Twentieth Century

At the start of the twentieth century there were therefore four different sorts of master's degree in the UK: the Scottish MA, granted as a first degree; the Master of Arts (Oxbridge and Dublin), granted to all BA graduates a certain period after their first degree without further study; master's degrees that could be gained either by further study or by gaining an honours degree (which, at the time in the UK involved further study beyond the ordinary degree, as it still does in Scotland and some Commonwealth countries); and master's degrees that could only be obtained by further study (including all London master's degrees). In 1903, the London Daily News criticised the practice of Oxford and Cambridge, calling their MAs “the most stupendous of academic frauds” and “bogus degrees”. Ensuing correspondence pointed out that “A Scotch M.A., at the most, is only the equivalent of an English B.A.” and called for common standards for degrees, while defenders of the ancient universities said that “the Cambridge M.A. does not pretend to be a reward of learning” and that “it is rather absurd to describe one of their degrees as a bogus one because other modern Universities grant the same degree for different reasons”.

In 1900 Dartmouth College introduced the Master of Commercial Science (MCS), first awarded in 1902. This was the first master's degree in business, the forerunner of the modern MBA. The idea quickly crossed the Atlantic, with Manchester establishing a Faculty of Commerce, awarding Bachelor and Master of Commerce degrees, in 1903. Over the first half of the century the automatic master's degrees for honours graduates vanished as honours degrees became the standard undergraduate qualification in the UK. In the 1960s, new Scottish universities (with the exception of Dundee, which inherited the undergraduate MA from St Andrews) reintroduced the BA as their undergraduate degree in Arts, restoring the MA to its position as a postgraduate qualification. Oxford and Cambridge retained their MAs, but renamed many of their postgraduate bachelor's degrees in the higher faculties as master's degrees, e.g. the Cambridge LLB became the LLM in 1982, and the Oxford BLitt, BPhil (except in philosophy) and BSc became the MLitt, MPhil and MSc.

In 1983, the Engineering Council issued a “Statement on enhanced and extended undergraduate engineering degree courses”, proposing the establishment of a 4-year first degree (Master of Engineering). These were up and running by the mid 1980s and were followed in the early 1990s by the MPhys for physicists and since then integrated master's degrees in other sciences such as MChem,

MMath, MGeol, etc., and in some institutions general or specific MSci (Master in Science) and MArts (Master in Arts) degrees. This development was noted by the Dearing Report into UK Higher Education in 1997, which called for the establishment of a national framework of qualifications and identified five different routes to master's degrees:

- Four year (five in Scotland) undergraduate degrees such as the MEng
- Conversion degrees, sometimes below the standard of undergraduate degrees in the same subject
- The undergraduate arts degree of the ancient universities of Scotland
- Specialist postgraduate programmes, such as the MA and MSc
- The Oxbridge MA, awarded without additional work

This led to the establishment of the Quality Assurance Agency, which was charged with drawing up the framework.

Twenty-first Century

In 2000 renewed pressure was put on Oxbridge MAs in the UK Parliament, with Labour MP Jackie Lawrence introducing an early day motion calling for them to be scrapped and telling the Times Higher Education it was a “discriminatory practice” and that it “devalues and undermines the efforts of students at other universities”. The following month the Quality Assurance Agency announced the results of a survey of 150 major employers showing nearly two thirds mistakenly thought the Cambridge MA was a postgraduate qualification and just over half made the same error regarding the Edinburgh MA, with QAA chief executive John Randall calling the Oxbridge MA “misleading and anachronistic”.

The QAA released the first “framework for higher education qualifications in England, Wales and Northern Ireland” in January 2001. This specified learning outcomes for M-level (master's) degrees and advised that the title “Master” should only be used for qualifications that met those learning outcomes in full. It addressed many of the Dearing Report's concerns, specifying that shorter courses at H-level (honours), e.g. conversion courses, should be styled Graduate Diploma or Graduate Certificate rather than as master's degrees, but confirmed that the extended undergraduate degrees were master's degrees, saying that “Some Masters degrees in science and engineering are awarded after extended undergraduate programmes that last, typically, a year longer than Honours degree programmes”. It also addressed the Oxbridge MA issue, noting that “the MAs granted by the Universities of Oxford and Cambridge are not academic qualifications”. The first “framework for qualifications of Higher Education Institutes in Scotland”, also published in January 2001, used the same qualifications descriptors, adding in credit values that specified that a stand-alone master should be 180 credits and a “Masters (following an integrated programme from undergraduate to Masters level study)” should be 600 credits with a minimum of 120 at M-level. It was specified that the title “Master” should only be used for qualifications that met the learning outcomes and credit definitions, although it was noted that “A small number of universities in Scotland have a long tradition of labelling certain first degrees as ‘MA’. Reports of Agency reviews of such provision will relate to undergraduate benchmarks and will make it clear that the title reflects Scottish custom and

practice, and that any positive judgement on standards should not be taken as implying that the outcomes of the programme were at postgraduate level.”

Titles

Masters degrees are commonly titled using the form ‘Master of ...’, where either a faculty (typically Arts or Science) or a field (Engineering, Physics, Chemistry, Business Administration, etc.) is specified. The two most common titles of master’s degrees are the Master of Arts (MA/M.A./A.M) and Master of Science (MSc/M.S./S.M.) degrees; which normally consist of a mixture of research and taught material. Integrated master’s degrees and postgraduate master’s degrees oriented towards professional practice are often more specifically named for their field of study (“tagged degrees”), including, for example, the Master of Business Administration, Master of Divinity, Master of Engineering and Master of Physics. A few titles are more general, for example Master of Philosophy (MPhil), used (in the same manner as Doctor of Philosophy) to indicate degrees with a large research component, Master of Studies (MSt)/Master of Advanced Study (MASt)/Master of Advanced Studies (M.A.S.), and Professional Master’s (MProf).

The form “Master in ...” is also sometimes used, particularly where a faculty title is used for an integrated master’s in addition to its use in a traditional postgraduate master’s, e.g. Master in Science (MSci) and Master in Arts (MArts). This form is also sometimes used with other integrated master’s degrees, and occasionally for postgraduate master’s degrees (e.g. Master’s in Accounting). Some universities use Latin degree names; because of the flexibility of syntax in Latin, the Master of Arts and Master of Science degrees may be known in these institutions as *Magister artium* and *Magister scientiæ* or reversed from the English order to *Artium magister* and *Scientiæ magister*. Examples of the reversed usage include Harvard University, the University of Chicago and MIT, leading to the abbreviations A.M. and S.M. for these degrees. The forms “Master of Science” and “Master in Science” are indistinguishable in Latin, thus MSci is “Master of Natural Sciences” at the University of Cambridge.

In the UK, stops (periods) are not used in degree abbreviations. In the US, The Gregg Reference Manual recommends placing periods in degrees (e.g. B.S., Ph.D.), however The Chicago Manual of Style recommends writing degrees without periods (e.g. BS, PhD).

Master of Science is generally abbreviated M.S. or MS in countries following United States usage and MSc in countries following British usage, where MS would refer to the degree of Master of Surgery. In Australia, some extended master’s degrees use the title “doctor”: Juris doctor and Doctors of Medical Practice, Physiotherapy, Dentistry, Optometry and Veterinary Practice. Despite their titles these are still master’s degree and may not be referred to as doctoral degrees, nor may graduates use the title “doctor”.

Types

- Postgraduate/graduate master’s degrees (MA/M.A./A.M., MSc/M.S., MBA/M.B.A., MSt, LL.M./LL.M., etc.) are the traditional formal form of master’s degree, where the student already holds an undergraduate (bachelor’s) degree on entry. Courses normally last one year in the UK and two years in the US.

- Integrated master's degrees (MChem, MEng, MMath, MPharm, MPhys, MPsych, MSci, etc.) are UK degrees that combine an undergraduate bachelor's degree course with an extra year at master's level (i.e. a total of four years in England, Wales and Northern Ireland, and five years in Scotland). A 2011 survey of UK Higher Education Institutes found that 64% offered integrated master's course, mostly in STEM disciplines, with the most common degrees being MEng, MSci and MChem. 82% of respondents conferred only a master's degree for the course, while 9% conferred a bachelor's degree at the end of the bachelor's-level stage and a master's degree at the end of the course and a further 9% conferred both bachelor's and master's degrees at the end of the course.
- Non-master's level master's degrees The ancient universities of the UK and Ireland have traditionally awarded MAs in a different manner to that usual today. The Scottish MA is a bachelor's-level qualification offered by the ancient universities of Scotland. The Oxbridge MA is not an academic qualification; it is granted without further examination to those who have gained a BA from Oxford or Cambridge Universities in England, and the MA of Trinity College Dublin in Ireland is granted to its graduates in a similar manner.

The UK Quality Assurance Agency defines three categories of Master's degrees:

- Research master's degrees are primarily research based, although may contain taught elements, particularly on research methods. Examples are the MPhil (always a research degree, often linked to a doctoral programme), MLitt (usually, but not always a research degree) and Master's by Research. They aim to prepare students fit research careers. Care should be taken not to confuse the Master *by* Research (MbyRes, MRes or ResM), which is a research degree in a specific subject, with the Master *of* Research (MRes), which is a taught degree concentrating on research methods.
- Specialised or advanced study master's degrees are primarily taught degrees, although commonly at least a third of the course is devoted to a research project assessed by dissertation. These may be stand-alone master's courses, leading to, e.g., MSc, MA or MRes degrees, or integrated master's degrees.
- Professional or practice master's degrees are designed to prepare students for a particular professional career and are primarily taught, although they may include work placements and independent study projects. Some may require professional experience for entry. Examples include MBA, MDiv, LLM and MSW as well as some integrated master's degrees. The name of the degree normally includes the subject name.

The United States Department of Education classifies master's degree as research or professional. Research master's degrees in the US, e.g. M.A./A.M. or M.S., require the completion of taught courses and examinations in a major and one or more minor subjects, and (normally) a research thesis. Professional master's degrees may be structured like research master's (e.g. M.E./M.Eng.) or may concentrate on a specific discipline (e.g. M.B.A.), and often substitute a project for the thesis.

The Australian Qualifications Framework classifies master's degrees as research, coursework or extended. Research master's degrees typically take one to two years, and two thirds of their content consists of research, research training and independent study. Coursework master's degrees

typically also last one to two years, and consist mainly of structured learning with some independent research and project work or practice-related learning. Extended master's degrees typically take three to four years and contain significant practice-related learning that must be developed in collaboration with relevant professional, statutory or regulatory bodies.

In Ireland, master's degrees may be either Taught or Research. Taught master's degrees are normally one to two year courses, rated at 60 - 120 ECTS credits, while research master's degrees are normally two year courses, either rated at 120 ECTS credits or not credit rated.

Structure

There are a range of pathways to the degree, with entry based on evidence of a capacity to undertake higher degree studies in the proposed field. A dissertation may or may not be required, depending on the program. In general, the structure and duration of a program of study leading to a master's degree will differ by country and by university.

Duration

Stand-alone master's programs in the US are normally two years in length. In some fields/programs, work on a doctorate begins immediately after the bachelor's degree, but a master's may be granted along the way as an intermediate qualification if the student petitions for it. Some universities offer evening options so that students can work during the day and earn a master's degree in the evenings.

In the UK, postgraduate master's degrees may be either "research" or "taught", with taught degrees being further subdivided into "specialist or advanced study" or "professional or practice". Taught degrees (of both forms) typically take a full calendar year (i.e. three semesters, 12 months), although some may be completed within an academic year (i.e. two semesters, 8 months), while research degrees often take either a full calendar year or two academic years. The UK *integrated master's degree* is combined with a bachelor's degree for a four (England, Wales and Northern Ireland) or five (Scotland) academic year total period - one academic year longer than a normal bachelor's degree.

In Australia, master's degrees, master's degrees vary from 1 year for a "research" or "coursework" master's following on from an Australian honours degree in a related field, with an extra six months if following on straight from an ordinary bachelor's degree and another extra six months if following on from a degree in a different field, to four years for an "extended" master's degree.

In the Overarching Framework of Qualifications for the European Higher Education Area defined as part of the Bologna process, a "second cycle" (i.e. master's degree) programme is typically 90–120 ECTS credits, with a minimum requirement of at least 60 ECTS credits at second-cycle level. The definition of ECTS credits is that "60 ECTS credits are allocated to the learning outcomes and associated workload of a full-time academic year or its equivalent", thus European master's degrees should last for between one calendar year and two academic years, with at least one academic year of study at master's level. The Framework for Higher Education Qualification (FHEQ) in England Wales and Northern Ireland level 7 qualifications and the Framework for Qualification

of Higher Education Institutes in Scotland (FQHEIS) level 11 qualifications (postgraduate and integrated master's degrees, with the exception of MAs from the ancient universities of Scotland and Oxbridge MAs) have been certified as meeting this requirement.

Irish master's degrees are 1 – 2 years (60 - 120 ECTS credits) for taught degrees and 2 years (not credit rated) for research degrees. These have also been certified as compatible with the FQ-EHEA.

Admission

Admission to a master's degrees normally requires successful completion of study at bachelor's degree level either (for postgraduate degrees) as a stand-alone degree or (for integrated degrees) as part of an integrated scheme of study. In countries where the bachelor's degree with honours is the standard undergraduate degree, this is often the normal entry qualification. In addition, students will normally have to write a personal statement and, in the arts and humanities, will often have to submit a portfolio of work.

In the UK, students will normally need to have a 2:1 for a taught master's course, and possibly higher for a research master's. Graduate schools in the US may require students to take one or more standardised tests, such as the GRE, GMAT or LSAT.

Comparable European Degrees

In some European countries, a *magister* is a first degree and may be considered equivalent to a modern (standardized) master's degree (e.g., the German, Austrian and Polish university *Diplom/Magister*, or the similar five-year Diploma awarded in several subjects in Greek, Spanish, Portuguese, and other universities and polytechnics).

Under the Bologna Process, countries in the European Higher Education Area (EHEA) are moving to a three cycle (bachelor's - master's - doctorate) system of degrees. Two thirds of EHEA countries have standardised on 120 ECTS credits for their second-cycle (master's) degrees, but 90 ECTS credits is the main form in Cyprus, Ireland and Scotland and 60-75 credits in Montenegro, Serbia and Spain. The combined length of the first and second cycle varies from "3 + 1" years (240 ECTS credits), through "3 + 2" or "4 + 1" years (300 ECTS credits), to "4 + 2" years (360 ECTS credits). As of 2015, 31 EHEA countries have integrated programmes that combine the first and second cycle and lead to a second-cycle qualification (e.g. the UK integrated master's degree), particularly in STEM subjects and subjects allied to medicine. These typically have a duration of 300 – 360 ECTS credits (five to six years), with the integrated master's degrees in England, Wales and Northern Ireland being the shortest at 240 ECTS credits (four years).

- In Denmark there are two forms of master's degree. The Master's Degree or *candidatus* is a FQ-EHEA second-cycle qualification worth 120 ECTS credits. These degrees are research-based and offered through universities. The second form is the Master Degree (no possessive) within the adult further education system, which is worth 60 ECTS credits and is taught part-time. The *candidatus* degree is abbreviated *cand.* and upon completion of, for instance, an engineering master's degree, a person becomes *cand.polyt.* (polytechnical). Similar abbreviations, inspired by Latin, apply to a large number of fields, e.g.: sociology (*cand.scient.soc*), economics (*cand.merc.*, *cand.polit.* or *cand.oecon*), law (*cand.jur*), hu-

manities (cand.mag) etc. Use of a cand. title requires a master's degree. Holders of a cand. degree are also entitled to use M.Sc. or M.A. titles, depending on the field of study. In Finland and Sweden, the title of kand. equates to a bachelor's degree.

- In France, the master's degree (*diplôme de master*) takes two years and is worth 120 ECTS credits. The French master's degree is the combination of two individual years : the master 1 (M1) and master 2 (M2), following the Bologna Process. Depending on the goal of the student (a doctorate or a professional career) the master 2 can also be called a "Master Recherche" (research master) and a "Master Professionnel" (professional master), each with different requirements. To obtain a national diploma for the master 2 requires a minimum of one year of study after the master 1. A French "diplôme d'Ingénieur" is also the equivalent of a master's degree, provided the diploma is recognised by the Commission des titres d'ingénieur, as are qualifications recognised at Level I of the *répertoire national des certifications professionnelles* (national register of professional certificates).
- In Italy the master's degree is equivalent to the two-year *Laurea magistrale*, which can be earned after a *Laurea* (a three-year undergraduate degree, equivalent to a bachelor's degree). In particular fields, namely law, pharmacy and medicine, this distinction is not made. University courses are therefore single and last five to six years, after which the master's degree is awarded (in this case referred to as *Laurea magistrale a ciclo unico*). The old *Laurea* degree (Vecchio Ordinamento, Old Regulations), which was the only awarded in Italy before the Bologna process, is equivalent to the current *Laurea Magistrale*.
- In the Netherlands the titles *ingenieur* (ir.), *meester* (mr.) and *doctorandus* (drs.) may be rendered, if obtained in the Netherlands from a university, after the application of the Bologna process, as: MSc instead of ir., LL.M. instead of mr. and MA or MSc instead of drs. This is because a single program that led to these degree was in effect before 2002, which comprised the same course load as the bachelor and master programs put together. Those who had already started the program could, upon completing it, bear the appropriate title (MSc, LL.M. or MA), but alternatively still use the old-style title (ir., mr. or drs.), corresponding to their field of study. Since these graduates do not have a separate bachelor's degree (which is in fact – in retrospect – incorporated into the program), the master's degree is their first academic degree. Bearers of foreign master's degree are able to use the titles ir., mr. and drs. only after obtaining a permission to bear such titles from the Dienst Uitvoering Onderwijs. Those who received their mr., ir. or drs. title after the application of the Bologna process have the option of signing as A. Jansen, M.A. or A. Jansen, M.Sc., depending on the field in which the degree was obtained, since the ir., mr. and drs. titles are similar to a master's degree, and the shortcut MA or M.Sc. may officially be used in order to render such title as an international title.
- In Switzerland, the old Licence or Diplom (4 to 5 years in duration) is considered equivalent to the master's degree.
- In Slovenia and Croatia, during the pre-Bologna process education, all Academic degrees were awarded after a minimum of four years of university studies and a successful defence of a written thesis are considered equivalent to the master's degree.

- In Baltic countries there is a two-year education program that offers a chance to gain a master's degree in interdisciplinary issues. The system offers an education in different areas, such as humanities, environmental and social issues, whilst paying specific consideration to the Baltic Sea area. It is a joint-degree program, which is part of a team effort with four universities. There is the University of Tartu in Estonia, the University of Turku in Finland, Vytautas Magnus University in Lithuania and the University of Latvia. The educational programmes allow students to be mobile within the system, for example one semester may be taken in a confederate school without paying additional membership or tuition fees. Subsequently after passing the qualifications provided, people may procure teaching qualifications and continue their scholastic research around doctoral studies, or carry on studying within their career in the private or public sector. Graduates of the program, within the Baltic Sea area are also given the chance to continue onwards with their studies within the postgraduate system if they have studied the social sciences or humanities field.
- In Greece, the *metaptychiako* which literally translates as *post-degree* (...programme or title), lasts normally from one to, more often, two years, and can be studied after a, at least, four-years undergraduate *ptychio*, which means *degree*.
- In Russia master (магистр) degree can be obtained after a 2-year master course (магистратура) which is available after a 4-year bachelor or a 5-year specialist course. A graduate may choose a master course completely different from his/her previous one. During these 2 years master students attend specialized lectures in chosen profile, choose a faculty advisor and prepare their master thesis which is eventually defended before certifying commission consisting mostly of professors, leading by the professor from another university.
- In the United Kingdom, first degrees in medicine, dentistry and veterinary science are considered equivalent to master's degrees despite, for historical reasons, often having the titles of bachelor's degrees.

South America

Brazil

In Brazil, after a regular graduation (after acquiring a bachelor's degree), students have the option to continue their academic career through a master's course (a.k.a. *stricto sensu* post-graduation) or specialization (a.k.a. *lato sensu* post-graduation) degrees. At the master's degree ("mestrado", in Portuguese, also referred as "pós-graduação *stricto sensu*") there are 2–3 years of full-time graduate-level studies. Usually focused on academic research, the master's degree (on any specific knowledge area) requires the development of a thesis, presented (and defended) to a board of Ph.D. after the period of research. Differently, the "specialization" degree (also referred as "pós-graduação *lato-sensu*"), also comprehends a 1–2 years studies, but do not require a new thesis to be purposed and defended, being usually attended by professionals looking for a complimentary formation on a different knowledge area than their original graduation.

In addition, a great part of Brazilian universities offers a M.B.A. (Master of Business Administration) degree. Those, nevertheless, are not the equivalent of US M.B.A. degree though, as it does not formally certifies the student/professional with a master's degree (*stricto-sensu*) but a post-graduation degree instead. A regular post-graduation course has to comply with a minimum of 360 class-hours, while a

M.B.A. degree has to comply with a minimum of 400 class-hours. Master's degree (*stricto sensu*) does not require minimum class-hours, but it's practically impossible to finish it before 1.5 year due the workload and research required; an average time for the degree is 2.5 years. Specialization (*lato sensu*) and M.B.A. degrees can be also offered as distance education courses, while the master's degree (*stricto-sensu*) requires physical attendance. In Brazil, the degree often serves as additional qualification for those seeking to differentiate themselves in the job market, or for those who want to pursue a Ph.D. It corresponds to the European (Bologna Process) 2nd Cycle or the North American master's.

Asia

Hong Kong

M.Arch., M.L.A., M.U.D., M.A., M.Sc., M.Soc.Sc., M.S.W., M.Eng., LL.M. Hong Kong requires one or two years of full-time coursework to achieve a master's degree.

For part-time study, two or three years of study are normally required to achieve a postgraduate degree.

M.Phil. As in the United Kingdom, M.Phil. or Master of Philosophy is a research degree awarded for the completion of a thesis, and is a shorter version of the Ph.D.

Pakistan

In Pakistani education system, there are two different master's degree programmes:

- 2 years master's programmes: these are mostly Master of Arts (M.A.) leading to M.Phil.;
- 4 years master's programmes: these are mostly Master of Science (M.S.) leading to Ph.D.

Both M.A. and M.S. are offered in all major subjects.

India

In the Indian system, a master's degree is a postgraduate degree following a Bachelor's degree and preceding a Doctorate, usually requiring two years to complete. The available degrees include:

- Master of Arts (M.A.);
- Master of Business Administration (M.B.A.);
- Master of Computer Applications (M.C.A.);
- Master of Computer Management (M.C.M.);
- Master of Design (M.Des.);
- Master of Engineering (M.Eng.);
- Master of Philosophy (M.Phil.);
- Master of Science (M.Sc.);
- Master of Science in Information Technology (M.Sc.I.T.);
- Master of Technology (M.Tech.);

- Master of Statistics (M.Stat.);
- Master of Laws (LL.M.);
- Master of Commerce (M.Com.).
- Master in Business Studies (M.B.S)
- Master of Architecture (M.Arch.)

Israel

- M.A., M.Sc., M.B.A.: postgraduate studies in Israel require the completion of a bachelor's degree and is dependent upon this title's grades. There exists also a direct track to a doctorate degree for graduate students, which lasts four to five years. Taking this route, the students must prepare a preliminary research paper during their first year, they then have to pass an exam after which they are automatically awarded a master's degree.
- M.Eng.: It is given by the Technion – Israel Institute of Technology. Comparing to the M.Sc., it is a non-thesis track.

Nepal

In Nepal, after bachelor's degree about to at least three or four years with full-time study in college and university with an entrance test for those people who want to study further can study in master and further Ph.D. and Doctorate degree. All Doctoral and Ph.D. or third cycle degree are based on research and experience oriented and result based. Master of Engineering (M.Eng.), Master of Education (M.Ed.), Master of Arts (M.A.) and all law and medicine related courses are studied after completion of successful bachelor towards doctoral degree. M.B.B.S. is only a medical degree with six and half years of study resulting medical doctor and need to finish its study o 4 years of period joining after master degree with minimum education with 15 or 16 years of university bachelor's degree education. The most professional and internationalised program in Nepal are:

- Master of Business Administration (M.B.A.);
- Master of Computer Applications (M.C.A.);
- Master of Engineering (M.Eng.);
- Master of Science (M.Sc.);
- Master of Science in Information Technology (M.Sc.I.T.);
- Master of Business Studies (M.B.S.);
- Master of Education (M.Ed);
- Master of Arts (M.A.);
- Master of Agriculture (M.Sc. Ag.);
- Master of Laws (LL.M.);
- Master of Management (M.M.).

Taiwan

In Taiwan, bachelor's degrees are about four years (with honors) and there is an entrance examination required for people who want to study in master and Ph.D. degrees. The courses offered for master and PhD normally are research-based. The most foreign student-friendly programs in Taipei, Taiwan are at:

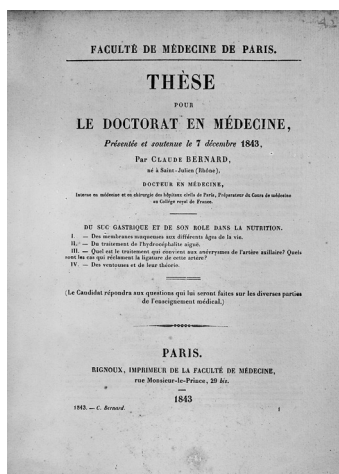
- National Taiwan University College of Management – Global M.B.A. (M.B.A. in Finance, Accounting, Management, International Business and Information Management);
- National ChengChi University – I.M.B.A.

Programs are entirely in English and tuition is less than would be paid in North America, with as little as US\$5000 for an M.B.A. As an incentive to increase the number of foreign students, the government of Taiwan and universities have made extra efforts to provide a range of quality scholarships available. These are university-specific scholarships ranging from tuition waivers, up to NT\$20,000 per month. The government offers the Taiwan Scholarship ranging from NT\$20,000–30,000 per month for two years. (US\$18,000–24,000 for a two-year program)

Doctorate



Academic doctors gather before the commencement exercises at Brigham Young University (April 2008).



The cover of the thesis presented by Claude Bernard to obtain his Doctor of Medicine degree (1843).

A doctorate (from Latin *docere*, “to teach”) or doctor’s degree (from Latin *doctor*, “teacher”) or doctoral degree (from the ancient formalism *licentia docendi*) is an academic degree awarded by universities that, in most countries, qualifies the holder to teach at the university level in the degree’s field, or to work in a specific profession. There are a variety of doctoral degrees, with the most common being the Doctor of Philosophy (Ph.D.), which is awarded in many different fields, ranging from the humanities to the scientific disciplines. There are also other types of doctorates, such as the Doctor of Musical Arts (D.M.A.), Doctor of Nursing Practice (DNP), and the Doctor of Education (Ed.D.). In some countries, the highest degree in a given field is called a terminal degree. Many universities also award “honorary doctorates” to individuals who have been deemed worthy of special recognition, either for scholarly work or for other contributions to the university or to society.

History

Middle Ages

The term “doctor” derives from the Latin *docere* meaning “to teach”. The doctorate (Latin: *doctum*, “[that which is] taught”) appeared in medieval Europe as a license to teach Latin (*licentia docendi*) at a university. Its roots can be traced to the early church in which the term “doctor” referred to the Apostles, church fathers, and other Christian authorities who taught and interpreted the Bible.

The right to grant a *licentia docendi* (i.e. the doctorate) was originally reserved to the Catholic church, which required the applicant to pass a test, to take an oath of allegiance and pay a fee. The Third Council of the Lateran of 1179 guaranteed the access—at that time largely free of charge—of all able applicants. Applicants were tested for aptitude. This right remained a bone of contention between the church authorities and universities that were slowly distancing themselves from the Church. The right was granted by the pope to the University of Paris in 1213 where it became a universal license to teach (*licentia ubique docendi*). However, while the *licentia* continued to hold a higher prestige than the bachelor’s degree *baccalaureus*, the latter was ultimately reduced to an intermediate step to the *magister* and doctorate, both of which now became the exclusive teaching qualification. According to Keith Allan Noble (1994), the first doctoral degree was awarded in medieval Paris around 1150.

The so-called professional, vocational, or technical curriculum of the Middle Ages included only theology, law, and medicine.

17th century

The doctorate of philosophy developed in Germany in the 17th century. The term “philosophy” does not refer solely to the field or academic discipline of philosophy, but is used in a broader sense in accordance with its original Greek meaning, which is “love of wisdom”. In most of Europe, all fields (history, philosophy, social sciences, mathematics, and natural philosophy/natural sciences) were traditionally known as philosophy, and in Germany and elsewhere in Europe the basic faculty of liberal arts was known as the “faculty of philosophy”. The doctorate of philosophy adheres to this historic convention, even though the degrees are not always for the study of philosophy. Park (2007) explains that it was not until formal education and degree programs were standardized in the early 19th century that the doctorate of philosophy was reintroduced in Germany as a research degree, abbreviated as Ph.D.

University doctoral training was a form of apprenticeship to a guild. The traditional term of study before new teachers were admitted to the guild of “Masters of Arts” was seven years, matching the apprenticeship term for other occupations. Originally the terms “master” and “doctor” were synonymous, but over time the doctorate came to be regarded as a higher qualification than the master’s degree. Makdisi’s revised hypothesis that the doctorate originated in the Islamic *ijazah*, a reversal of his earlier view that saw both systems as of “the most fundamental difference”, was rejected by Huff as unsubstantiated.

Doctorate, as a term for the license to teach (the holder being a Master of the trade) should not be confused with the prenominal title Dr. (Doctor), which is a salutation. The first reference to the term *Doctor of (field/trade)* was printed in an English Dictionary (printed 1675). It shows that the D.D. and LL.D. (Doctor of Divinity and Legum Doctor [of Laws]) were likely the first, at least recorded, “doctor” titles (but still not a formal licentia or degree). This date preceded all other academic titles and when created, formal degrees, such as the Scottish M.B. (bachelor of medicine; later M.D.), and the contemporary German Ph.D.

University degrees, including doctorates, were originally restricted to men. The first women to be granted doctorates were Elena Cornaro Piscopia in 1678 at the University of Padua, Laura Bassi in 1732 at Bologna University, Dorothea Erxleben in 1754 at Halle University and María Isidra de Guzmán y de la Cerda in 1785 at Complutense University, Madrid. By contrast, the University of Oxford did not accept women as full members of the university until 1920 and the University of Cambridge did not grant its first PhD to a woman until 1926.

Modern Times

The use and meaning of the doctorate has changed over time, and is subject to regional variations. For instance, until the early 20th century few academic staff or professors in English-speaking universities held doctorates, except for very senior scholars and those in holy orders. After that time the German practice of requiring lecturers to have completed a research doctorate spread. Universities’ shift to research-oriented (based upon the scientific method, inquiry, and observation) education increased the doctorates importance. Today, a research doctorate (PhD) or its equivalent (as defined in the USA by the NSF) is generally a prerequisite for an academic career, although many recipients do not work in academia.

Professional doctorates developed in the United States from the 19th century onward. The first professional doctorate to be offered in the United States was the M.D. at Kings College (now Columbia University) after the medical school’s founding in 1767, although this was not a professional doctorate in the modern American sense as it was awarded for further study after the qualifying Bachelor of Medicine (M.B.) rather than being a qualifying degree. The MD became the standard first degree in medicine during the 19th century, but as a three year undergraduate degree; it did not become established as a graduate degree until 1930. The MD, as the standard qualifying degree in medicine, gave that profession the ability (through the American Medical Association, established in 1847 for this purpose) to set and raise standards for entry into professional practice.

The modern research degree, in the shape of the German-style Ph.D. was first awarded in the U.S. in 1861. This differed from the MD in that the latter was, a vocational “professional degree”

that trained students to apply or practice knowledge, rather than generate it, similar to other students in vocational schools or institutes.

The next professional doctorate, the Juris Doctor (J.D.), was established by Chicago University in 1902. However it took a long time to be accepted, not replacing the Bachelor of Laws (LLB) until the 1960s, by which time the LLB was generally taken as a graduate degree. Notably, the curriculum for the JD and LLB were identical, with the degree being renamed as a doctorate, and it (like the MD) was not equivalent to the PhD, raising criticism that it was “not a ‘true Doctorate’”. When professional doctorates were established in the UK in the late 1980s and early 1990s, they did not follow the US model but were instead set up as research degrees at the same level as PhDs but with some taught components and a professional concentration for the research work.

The older-style doctorates, now usually called higher doctorates in the United Kingdom, take much longer to complete, since candidates must show themselves to be leading experts in their subjects. These doctorates are now less common in some countries and are often awarded *honoris causa*. The habilitation is still used for academic recruitment purposes in many countries within the EU, and involves either a new long thesis (a second book) or a portfolio of research publications. The habilitation (highest available degree) demonstrates independent and thorough research, experience in teaching and lecturing, and, more recently, the ability to generate supportive funding. The habilitation follows the research doctorate, and in Germany it can be a requirement for appointment as a *Privatdozent* or professor.

Types

Since the Middle Ages, the number and types of doctorates awarded by universities has proliferated throughout the world. Practice varies from one country to another. While a doctorate usually entitles one to be addressed as “doctor”, use of the title varies widely, depending on the type and the associated occupation.

Research Doctorate

Research doctorates are awarded in recognition of academic research that is publishable, at least in principle, in a peer-reviewed academic journal. The best-known research degree title, in the Anglo-sphere, is Doctor of Philosophy (abbreviated Ph.D., PhD or, at some British universities, DPhil) awarded in many countries throughout the world. Other research doctorates include the Doctor of Education (Ed.D. or EdD), Doctor of Arts (D.A.), Doctor of Musical Arts (D.M.A.), Doctor of Professional Studies/Professional Doctorate (ProfDoc or DProf), Doctor of Social Science (D.S.Sc. or DSocSci), Doctor of Business Administration (D.B.A. or DBA), Doctor of Management (DMan), various doctorates in engineering, such as the US Doctor of Engineering (D.Eng., D.E.Sc. or D.E.S.) (also awarded in Japan and South Korea), the UK Engineering Doctorate (EngD), the German engineering doctorate *Doktor-Ingenieur (Dr.-Ing.)* and the German natural science doctorate *Doctor rerum naturalium (Dr.rer.nat.)*. The UK Doctor of Medicine (MD or MD (Res)) and Doctor of Dental Surgery (DDS) can be research doctorates. The Doctor of Theology (Th.D., D.Th. or ThD), Doctor of Practical Theology (DPT) and the Doctor of Sacred Theology (S.T.D., or D.S.Th.) are research doctorates in theology.

Criteria for research doctorates vary, but typically require completion of a substantial body of original research, which may be presented as a single thesis or dissertation, or as a portfolio of

shorter project reports (thesis by publication). The submitted dissertation is assessed by a committee of examiners, and is then typically defended by the candidate during an oral examination (*viva* in the UK and India) by the committee. Candidates may also be required to complete graduate-level courses in their field, as well as study research methodology.

The time required to complete a research doctorate varies from three years, excluding undergraduate study, to six years or more. Generally longer times to degree are typical in American programs in comparison to those in most other countries.

Licentiate

Licentiate degrees vary widely in their meaning, and in a few countries are doctoral level qualifications. Sweden awards the licentiate degree as a two-year qualification at doctoral level and the doctoral degree (PhD) as a four-year qualification. Sweden originally abolished the Licentiate in 1969 but reintroduced it in response to demands from business. Finland also has a two-year doctoral level licentiate degree, similar to Sweden's. Outside of Scandinavia, the licentiate is normally a lower level qualification. In Belgium, the licentiate was the basic university degree prior to the Bologna Process and was approximately equivalent to a bachelor's degree, while in France and other countries it is the bachelor's-level qualification in the Bologna process. In the Pontifical system, the Licentiate in Sacred Theology (STL) is equivalent to an advanced master's degree, or the post-master's coursework required in preparation for a doctorate (i.e. similar in level to the Swedish/Finnish licentiate degree), while other licences (such as the Licence in Canon Law) are at the level of master's degrees.

Higher Doctorate and Post-Doctoral Degrees

A higher tier of research doctorates may be awarded on the basis of a formally submitted portfolio of published research of a particularly high standard. In Poland, that standard was a discovery or innovative element beyond the use of scientific methods. Examples include the Doctor of Science (D.Sc.) and Doctor of Letters (D.Litt.) degrees found in the UK, Ireland and some Commonwealth countries, and the traditional doctorates in Scandinavia.

The *École Saint-Thomas-d'Aquin* of the *Université catholique de Louvain*, for instance, has offered the opportunity for students who had already earned a doctorate to earn the degree of *Maître Agrégé* (*Magister Aggregatus*).

The habilitation teaching qualification (*facultas docendi* or "faculty to teach") under a university procedure with a thesis and an exam is commonly regarded as belonging to this category in Germany, Austria, France, Liechtenstein, Switzerland, Poland, etc. The habilitation results in an award of a formal "Dr. habil." degree or the holder of the degree may add "habil." to his research doctorate such as "Dr. phil. habil." or "Dr. rer. nat. habil." In some European universities, especially in German-speaking countries, the degree is insufficient to have teaching duties without professor supervision (or to teach and supervise Ph.D. students independently) without an additional instructor/teaching certificate/license, such as *Privatdozent*. In many countries of Central and Eastern Europe, the degree gives the *venia legendi*, Latin for "permission for lecturing," or the *ius docendi*, "right of teaching" a specific academic subject at universities for a lifetime. The French academic system used to have a higher doctorate, called "State doctorate" (*doctorat d'État*), but it

was superseded by the habilitation (*Habilitation à diriger des recherches*, “accreditation to supervise research”, abbreviated HDR) in 1984.

Higher doctorates are often also awarded *honoris causa* when a university wishes to formally recognize an individual’s achievements and contributions to a particular field.

Doctor of Commerce and Doctor of Medicine can also be awarded at the higher doctorate level.

Professional Doctorate

In some countries professional doctorates are awarded in certain fields where there may be comparatively less or no scholarly education and scholarly research. Examples of professional doctorates include the US and Canadian degrees of Doctor of Pharmacy (Pharm.D.), Doctor of Medicine (D.M., M.D.), Doctor of Ministry (D.Min.), Doctor of Dental Medicine (D.M.D.), Doctor of Dental Surgery (D.D.S.), Doctor of Optometry (O.D.), Doctor of Physical Therapy (D.P.T.), Doctor of Chiropractic (D.C.), Juris Doctor (J.D.), Doctor of Osteopathic Medicine (D.O.), Doctor of Psychology (Psy.D), Doctor of Social Work (D.S.W.), Doctor of Veterinary Medicine (D.V.M.), and Doctor of Nursing Practice (D.N.P.). On the other hand, some doctorates are considered both research and professional doctorates (such as the Ed.D., D.Min., D.B.A., D.M.) because they have a theory and practice requirement within their respective original research compiled in the dissertations. Some are only offered in the US, such as Doctor of Audiology (Au.D.).

Naming and shorthand conventions for professional doctorates vary by discipline. As noted above some professional doctorates are designed by a “D” before or after a shortened name of or acronym for the discipline (e.g. Pharm.D., D.Min., or D.S.W.). In some cases, professional doctorates are designated more generally, such as the Doctor of Professional Studies, which goes by D.Prof., D.P.P, or D.P.S.

In Australia, the term is on occasion applied to the *Scientiae Juridicae Doctor* (S.J.D.), and on other occasions that degree is also categorized as a research degree.

While in the US, professional doctorates are a separate class of doctorate from research doctorates, in other countries the term doctorate is reserved for research degrees and if, as in Canada and Australia, professional degrees bear the name “Doctor of ...”, etc., it is made clear that these are not doctorates.

In the UK and Ireland, all doctorates are third cycle qualifications in the Bologna Process, comparable to US research doctorates. Although all doctorates are research degrees, professional doctorates normally include taught components while the name PhD/DPhil is normally used for doctorates purely by thesis. Professional and practice-based doctorates such as the EdD, DClinPsy, MD, DBA and EngD are full doctorates at the same level as the PhD in the national qualifications frameworks; they are not first professional degrees but are “often post-experience qualifications”. In 2009 there were 308 professional doctorate programs in the UK, up from 109 in 1998, with the most popular being the EdD (38 institutions), DBA (33), EngD/DEng (22), MD/DM (21), and DClinPsy/DClinPsych/ClinPsyD (17).

Honorary

When a university wishes to formally recognize an individual’s contributions to a particular field

or philanthropic efforts, it may choose to grant a doctoral degree *honoris causa* (i.e. “for the sake of the honor”), waiving the usual requirements for granting the degree. Some universities do not award honorary degrees, for example, Cornell University, the University of Virginia, the California Institute of Technology, and Massachusetts Institute of Technology.

National Variations

Argentina

In Argentina the doctorate (*doctorado*) is the highest academic degree. The intention is that candidates produce original contributions in their field knowledge within a frame of academic excellence. A dissertation or thesis is prepared under the supervision of a tutor or director. It is reviewed by a Doctoral Committee composed of examiners external to the program and at least one examiner external to the institution. The degree is conferred after a successful dissertation defence. Currently, there are approximately 2,151 postgraduate careers in the country, of which 14% were doctoral degrees. Doctoral programs in Argentina are overseen by the National Commission for University Evaluation and Accreditation, an agency in Argentina’s Ministry of Education, Science and Technology.

Brazil

Doctoral candidates are normally required to have a Master’s degree in a related field. Exceptions are based on their individual academic merit. A second and a third foreign language are other common requirements, although the requirements regarding proficiency commonly are not strict. The admissions process varies by institution. Some require candidates to take tests while others base admissions on a research proposal application and interview only. In both instances however, a faculty member must agree prior to admission to supervise the applicant.

Requirements usually include satisfactory performance in advanced graduate courses, passing an oral qualifying exam and submitting a thesis that must represent an original and relevant contribution to existing knowledge. The thesis is examined in a final public oral exam administered by at least five faculty members, two of whom must be external. After completion, which normally consumes 4 years, the candidate is commonly awarded the degree of *Doutor* (Doctor) followed by the main area of specialization, e.g. *Doutor em Direito* (Doctor of Laws), *Doutor em Ciências da Computação* (Doctor of Computer Sciences), *Doutor em Filosofia* (Doctor of Philosophy), *Doutor em Economia* (Doctor of Economics), *Doutor em Engenharia* (Doctor of Engineering) or *Doutor em Medicina* (Doctor of Medicine). The generic title of *Doutor em Ciências* (Doctor of Sciences) is normally used to refer collectively to doctorates in the natural sciences (i.e. Physics, Chemistry, Biological and Life Sciences, etc.)

All graduate programs in Brazilian public universities are tuition-free (mandated by the Brazilian constitution). Some graduate students are additionally supported by institutional scholarships granted by federal government agencies like CNPq (*Conselho Nacional de Desenvolvimento Científico e Tecnológico*) and CAPES (*Coordenação de Aperfeiçoamento do Pessoal de Ensino Superior*). Personal scholarships are provided by the various FAP’s (*Fundações de Amparo à Pesquisa*) at the state level, especially FAPESP in the state of São Paulo, FAPERJ in the state of Rio de Janeiro and FAPEMIG in the state of Minas Gerais. Competition for graduate financial aid

is intense and most scholarships support at most 2 years of Master's studies and 4 years of doctoral studies. The normal monthly stipend for doctoral students in Brazil is between 500 and 1000 USD.

A degree of *Doutor* usually enables an individual to apply for a junior faculty position equivalent to a US Assistant Professor. Progression to full professorship known as *Professor Titular* requires that the candidate be successful in a competitive public exam and normally takes additional years. In the federal university system, doctors who are admitted as junior faculty members may progress (usually by seniority) to the rank of Associate Professor then become eligible to take the competitive exam for vacant full professorships. In São Paulo state universities, Associate Professorships and subsequent eligibility to apply for a full professorship are conditioned on the qualification of *Livre-docente* and requires, in addition to a doctorate, a second thesis or cumulative portfolio of peer-reviewed publications, a public lecture before a panel of experts (including external members from other universities), and a written exam.

In recent years some initiatives as jointly supervised doctorates (e.g. "cotutelles") have become increasingly common in the country, as part of the country's efforts to open its universities to international students.

Denmark

Denmark offers four levels of degrees: 1) a three-year bachelor's degree (e.g. Bachelor of Arts degree); 2) a five-year candidate's degree (e.g. *Candidatus/Candidata Magisterii*), generally compared to a master's degree; 3) a ph.d. degree, which replaced the licentiate in 1988; 4) a doctor's degree (e.g. *Doctor Philosophiae*), which is the higher doctorate. (A three-year extended research program, leading to the magister's degree was phased out to meet the international standards of the Bologna Process.)

For the Ph.D. degree, the candidate writes a thesis and defends it orally at a formal disputation. In the disputation, the candidate defends his thesis against three official opponents as well as opponents from the auditorium (*ex auditorio*).

For the higher doctorate, the candidate writes a major thesis and has to defend it orally in which the candidate (called *præces*) defends this thesis against two official opponents as well as opponents from the auditorium (*ex auditorio*).

Egypt

In Egypt, the doctorate (abbreviated as M.D.) is equivalent to the Ph.D. degree. To earn an M.D. in a science specialty, one must have a master's degree (M.Sc.) (or two diplomas before the introduction of M.Sc. degree in Egypt) before applying. The M.D. degree involves courses in the field and defending a dissertation. It takes on average three to five years.

Many postgraduate medical and surgical specialties students earn a Doctorate. After finishing a 6-year medical school and one-year internship (house officer), physicians and surgeons earn the M.B. B.Ch. degree, which is equivalent to a US MD degree. They can then apply to earn a master's degree or a speciality diploma, then an MD degree in a specialty.

The Egyptian M.D. degree is written using the name of one's specialty. For example, M.D. (Geriatrics) means a doctorate in Geriatrics, which is equivalent to a Ph.D. in Geriatrics.

Finland

The Finnish requirement for the entrance into doctoral studies is a master's degree or equivalent. All universities have the right to award doctorates. The *ammattikorkeakoulu* institutes (institutes of higher vocational education that are not universities but often called "Universities of Applied Sciences" in English) do not award doctoral or other academic degrees. The student must:

- Demonstrate understanding of their field and its meaning, while preparing to use scientific or scholarly study in their field, creating new knowledge.
- Obtain a good understanding of development, basic problems and research methods
- Obtain such understanding of the general theory of science and letters and such knowledge of neighbouring research fields that they are able to follow the development of these fields.

The way to show that these general requirements have been met is:

- Complete graduate coursework.
- Demonstrate critical and independent thought
- Prepare and publicly defend a dissertation (a monograph or a compilation thesis of peer-reviewed articles). In fine arts, the dissertation may be substituted by works and/or performances as accepted by the faculty.

Entrance is not as controlled as in undergraduate studies, where a strict *numerus clausus* is applied. Usually, a prospective student discusses his plans with a professor. If the professor agrees to accept the student, the student applies for admission. The professor may recruit students to his group. Formal acceptance does not imply funding. The student must obtain funding either by working in a research unit or through private scholarships. Funding is more available for natural and engineering sciences than in letters. Sometimes, normal work and research activity are combined.

Prior to introduction of the Bologna process, Finland required at least 42 credit weeks (1,800 hours) of formal coursework. The requirement was removed in 2005, leaving the decision to individual universities, which may delegate the authority to faculties or individual professors. In Engineering and Science, required coursework varies between 60 and 70 ECTS.

The duration of graduate studies varies. It is possible to graduate three years after the master's degree, while much longer periods are not uncommon. The study ends with a dissertation, which must present substantial new scientific/scholarly knowledge. The dissertation can either be a monograph or it an edited collection of 3 to 7 journal articles. Students unable or unwilling to write a dissertation may qualify for a licentiate degree by completing the coursework requirement and writing a shorter thesis, usually summarizing one year of research.

When the dissertation is ready, the faculty names two expert pre-examiners with doctoral degrees from the outside the university. During the pre-examination process, the student may receive comments on the work and respond with modifications. After the pre-examiners approve, the doctoral candidate applies the faculty for permission to print the thesis. When granting this permission, the faculty names the *opponent* for the thesis defence, who must also be an outside

expert, with at least a doctorate. In all Finnish universities, long tradition requires that the printed dissertation hang on a chord by a public university noticeboard for at least ten days prior to for the dissertation defence.

The doctoral dissertation takes place in public. The opponent and the candidate conduct a formal debate, usually wearing white tie, under the supervision of the thesis supervisor. Family, friends, colleagues and the members of the research community customarily attend the defence. After a formal entrance, the candidate begins with an approximately 20-minute popular lecture (*lectio praecursoria*), that is meant to introduce laymen to the thesis topic. The opponent follows with a short talk on the topic, after which the pair critically discuss the dissertation. The proceedings take two to three hours. At the end the opponent presents his final statement and reveals whether he/she will recommend that the faculty accept it. Any member of the public then has an opportunity to raise questions, although this is rare. Immediately after the defence, the supervisor, the opponent and the candidate drink coffee with the public. Usually, the attendees of the defence are given the printed dissertation. In the evening, the passed candidate hosts a dinner (Finnish: *karonkka*) in honour of the opponent. Usually, the candidate invites his family, colleagues and collaborators.

Doctoral graduates are often Doctors of Philosophy (*filosofian tohtori*), but many fields retain their traditional titles: Doctor of Medicine (*lääketieteen tohtori*), Doctor of Science in Technology (*tekniikan tohtori*), Doctor of Science in Arts (Art and Design), etc.

The doctorate is a formal requirement for a docenture or professor's position, although these in practice require postdoctoral research and further experience. Exceptions may be granted by the university governing board, but this is uncommon, and usually due to other work and expertise considered equivalent.

France

History

Before 1984 three research doctorates existed in France: the State doctorate (*doctorat d'État*, "DrE", the old doctorate introduced in 1808), the third cycle doctorate (*Doctorat de troisième cycle*, also called doctorate of specialty, *Doctorat de spécialité*, created in 1954 and shorter than the State doctorate) and the diploma of doctor-engineer (*diplôme de docteur-ingénieur* created in 1923), for technical research.

During the first half of the 20th century, following the submission of two theses (primary thesis, *thèse principale*, and secondary thesis, *thèse complémentaire*) to the Faculty of Letters (in France, "letters" is equivalent to "humanities") at the University of Paris, the doctoral candidate was awarded the so-called *Doctorat ès lettres*. There was also the less prestigious "university doctorate" *Doctorat d'université* which could be received for the submission of a single thesis.

In the 1950s, the *Doctorat ès lettres* was renamed to *Doctorat d'État*. In 1954 (for the sciences) and 1958 (for letters and human sciences), the less demanding *Doctorat de troisième cycle* degree was created on the model of the American Ph.D. with the purpose to lessen what had become an increasingly long period of time between the typical students' completion of their *Diplôme d'études supérieures*, roughly equivalent to a Master of Arts) and their *Doctorat d'État*.

After 1984, only one type of doctoral degree remained: the “doctorate” (*Doctorat*). A special diploma was created called the “accreditation to supervise research” (*Habilitation à diriger des recherches*), a professional qualification to supervise doctoral work. (This diploma is similar in spirit to the older State doctorate, and the requirements for obtaining it are similar to those necessary to obtain tenure in other systems.) Before only professors or senior full researchers of similar rank were normally authorized to supervise a doctoral candidate’s work. Now habilitation is a prerequisite to the title of professor in university (*Professeur des universités*) and to the title of Research Director (*Directeur de recherche*) in national public research agency such as CNRS, INRIA, or INRA.

Admission

Today, the doctorate (*doctorat*) is a research-only degree. It is a national degree and its requirements are fixed by the minister of higher education and research. Except for a few private institutions, only public institutions award the doctorate. It can be awarded in any field of study. The master’s degree is a prerequisite. The normal duration is three years. The redaction of a comprehensive thesis constitutes the bulk of the doctoral work. While the length of the thesis varies according to the discipline, it is rarely less than 150 pages, and often substantially more. Some 15,000 new doctoral matriculations occur every year and ~10,000 doctorates are awarded.

Doctoral candidates can apply for a three-year fellowship. The most well known is the *allocation de recherche du ministère de l’enseignement supérieur et de la recherche* (4,000 granted every year with a gross salary of 19,740 euros as of December 2012).

Since 2002 candidates study specific courses, but there is no written examination for the doctorate. The candidate has to write a thesis that is read by two external reviewers. The head of the institution decides whether the candidate can defend the thesis, after considering the external reviews. The jury members are designated by the head of the institution. The candidate’s supervisor and the external reviewers are generally jury members. The maximum number of jury members is 8. The defense generally lasts 45 minutes in scientific fields, followed by 1 – 2 and a half hours of questions from the jury or other doctors present. The defense and questions are public. The jury then deliberates in private and then declares the candidate admitted or “postponed”. The latter is rare. The acceptance is generally qualified by a distinction: “honourable”, which is the minimum, “very honourable”, the usual distinction, and “very honourable with the congratulation of the jury” (*Très honorable avec félicitations*). Because no national criteria define this last distinction, many institutions do not award it. New regulations concerning this distinction were set in 2006. Many institutions do not award distinctions.

The title of doctor (*docteur*) is used only by medical and pharmaceutical practitioners who hold a doctor’s State diploma (*diplôme d’État de docteur*) rather than a doctorate. The diploma is a first-degree.

Germany

Most doctorates in Germany are research doctorates and are awarded in the process of the so-called *Promotion* (“promotion”). Its duration depends on the field. A doctorate in medicine may take less than a full-time year to complete, other fields take three to six. The concept of a separate

professional doctorate does not exist formally. Most doctorates are awarded with specific Latin designations for the field of research (except for engineering, where the designation is German) instead of a general degree for all fields (e.g., the Ph.D.). The most important degrees are:

- *Dr. rer. nat. (rerum naturalium;* natural and formal sciences, i.e. physics, chemistry, biology, mathematics, computer science and information technology);
- *Dr. phil. (philosophiae;* humanities such as philosophy, philology, history, and social sciences such as sociology or psychology);
- *Dr. iur. (iuris;* law);
- *Dr. oec. (oeconomiae;* economics);
- *Dr. rer. pol. (rerum politicarum;* political science, business administration);
- *Dr. theol. (theologiae;* theology);
- *Dr. med. (medicinae;* medicine);
- *Dr. med. dent. (medicinae dentariae;* dentistry);
- *Dr. med. vet. (medicinae veterinariae;* veterinary medicine);
- *Dr.-Ing.* (engineering).

Over fifty such designations are available, many of them rare or no longer in use. For addressing, the degree is commonly written in front of the name in abbreviated form, e.g., *Dr. rer. nat. Max Mustermann*. Although the honorific does not become part of the name, holders can demand that the title appear in official documents. The title is not mandatory. The honorific is commonly used in formal letters. Outside of the academic context, the designation is often dropped. For holders of other titles, only the highest title is mentioned. A special designation is the *Dr. h.c.* (from Latin *honoris causa*), which is an honorary doctorate. Multiple holders of doctorate degrees can be addressed as *Dres.* (from Latin *doctores*).

Upon completion of the habilitation thesis (*Habilitationsschrift*), a *Habilitation* is awarded, which is indicated by appending *habil.* to the doctorate, e.g., *Dr. rer. nat. habil. Max Mustermann*. It is considered an additional academic qualification rather than an academic degree formally. It qualifies the owner to teach at German universities (*facultas docendi*). The holder of a *Habilitation* receives the authorization to teach a certain subject (*venia legendi*). This has been the traditional prerequisite for attaining *Privatdozent* (PD) and employment as a full university Professor. With the introduction of *Juniorprofessoren*—around 2005—as an alternative track towards becoming a professor at universities (with tenure), *Habilitation* is no longer the only university career track.

India

In India, doctorates are offered by universities. Entry requirements include master's degree. Some universities consider undergraduate degrees in professional areas such as engineering, medicine or law as qualifications for pursuing doctorate level degrees. Entrance examinations are held for almost all programs. In most North Indian universities, coursework duration and thesis is 2 years and in most South Indian universities is 3 years.

The most common doctoral degree is Ph.D. Others include D.B.A. (Doctor of Business Administration), DIT (Doctor of Information Technology), LL.D. (Doctor of Laws) and D. Sc (Doctor of Science). Nationally important schools such as Indian Institute of Management, National Institute of Industrial Engineering call their doctoral programmes fellow programmes. Pharmacy Council of India permits a few colleges to offer Pharm D course (Doctorate in Pharmacy). Entry to professional fields such as medicine, dentistry, occupational therapy and physical therapy is at the bachelor's level. They are usually of longer duration than a regular bachelor's degree (e.g. B.Sc., B.Com., B.A.). The Pharm. D degree (Doctor of Pharmacy) takes 6 years.

Italy

Italy uses a three-level degree system. The first-level degree, called a “laurea” (*Bachelor's degree*), requires three years and a short thesis. The second-level degree, called a “laurea magistrale” (*Master's degree*), is obtained after two additional years, specializing in a branch of the field. This degree requires more advanced thesis work, usually involving academic research or an internship. The final degree is called a “dottorato di ricerca” (*Ph.D.*) and is obtained after three years of academic research on the subject and a thesis.

Alternatively, after obtaining the *laurea* or the *laurea magistrale* one can complete a “Master's” (first-level Master's after the *laurea*; second-level Master's after the *laurea magistrale*) of one or two years, usually including an internship. An Italian “Master's” is not the same as a master's degree; it is intended to be more focused on professional training and practical experience.

Regardless of the field of study, the title for Bachelors Graduate students is *Dottore/Dottoressa* (abbrev. *Dott./Dott.ssa*, or as *Dr.*), not to be confused with the title for the Ph.D., which is instead *Dottore/Dottoressa di Ricerca*. A *laurea magistrale* grants instead the title of *Dottore/Dottoressa magistrale*. Graduates in the fields of Education, Art and Music are also called *Dr. Prof.* (or simply *Professore*) or *Maestro*. Many professional titles, such as *ingegnere* (engineer) are awarded only upon passing a post-graduation examination (*esame di stato*), and registration in the relevant professional association.

The first institution in Italy to create a doctoral program (Ph.D.) was Scuola Normale Superiore di Pisa in 1927 under the historic name “*Diploma di Perfezionamento*”. Further, the research doctorates or Ph.D. (Italian: *Dottorato di ricerca*) in Italy were introduced with law and Presidential Decree in 1980 (Law of February 21, 1980, No. 28 and the Presidential Decree No. 382 of 11 July 1980), referring to the reform of academic teaching, training and experimentation in organisation and teaching methods.

Hence the Superior Graduate Schools in Italy (Grandes écoles) (Italian: *Scuola Superiore Universitaria*), also called *Schools of Excellence* (Italian: *Scuole di Eccellenza*) such as Scuola Normale Superiore di Pisa and Sant'Anna School of Advanced Studies keep their historical “*Diploma di Perfezionamento*” Ph.D. title by law and MIUR Decree.

Japan

Dissertation-only

Until the 1990s, most natural science and engineering doctorates in Japan were earned by industrial researchers in Japanese companies. These degrees were awarded by the employees' for-

mer university, usually after years of research in industrial laboratories. The only requirement is submission of a dissertation, along with articles published in well-known journals. This program is called *ronbun hakase* (論文博士?). It produced the majority of engineering doctoral degrees from national universities. University-based doctoral programs called *katei hakase* (課程博士?), are gradually replacing these degrees. By 1994, more doctoral engineering degrees were earned for research within university laboratories (53%) than industrial research laboratories (47%). Since 1978, Japan Society for the Promotion of Science (JSPS) has provided tutorial and financial support for promising researchers in Asia and Africa. The program is called JSPS RONPAKU.

Professional Degree

The only professional doctorate in Japan is the Juris Doctor, known as *Hōmu Hakushi* (法務博士) The program generally lasts two or three years. This curriculum is professionally oriented, but unlike in the US the program does not provide education sufficient for a law license. All candidates for a bar license must pass the bar exam (*Shihou shiken*), attend the Legal Training and Research Institute and pass the practical exam (*Nikai Shiken* or *Shihou Shushusei koushi*).

Netherlands and Flanders

The traditional academic system of the Netherlands provided four basic academic diplomas and degrees: *propaedeuse*, *kandidaat*, *doctorandus* (drs.) (with equivalent degrees in engineering - ir. and law - mr.) and *doctor* (dr.). After successful completion of the first year of university, the student was awarded the propaedeutic diploma (not a degree). In some fields, this diploma was abolished in the 1980s: in physics and mathematics, the student could obtain directly a *kandidaat* (*candidate*) degree in two years. The candidate degree was all but abolished by 1989. It used to be attained after four or five years of academic study, after which the student was allowed to begin work on his doctorandus thesis. The successful completion of this thesis conveyed the *doctorandus* title, implying that the student's initial studies were finished. In addition to these 'general' degrees, specific titles were available for specific subjects, which are equivalent to the *doctorandus* degree: for law: *meester* (master) (mr.), and for engineering: *ingenieur* (engineer)(ir.). More recently the Dutch incorporated the Anglo-Saxon system of academic degrees into their own. The old candidate's degree was relabeled as the bachelor's degree and the doctorandus' by the master's degree. However, Dutch university programmes tend to include advanced subject matter that e.g., at Harvard is taught in Ph.D.-courses (for instance advanced quantum mechanics or general relativity in a Dutch course for the master's degree in theoretical physics).

Students can enroll in a doctorate system after achieving a master's degree (or equivalent). The most common way is to work as *promovendus/assistant in opleiding* (aio)/*onderzoeker in opleiding* (oio) (research assistant with additional courses and supervision), perform extensive research and write a dissertation consisting of published articles (over a period of four or more years, averaging about 5.5). Research can be conducted without official research assistant status, for example through a business-sponsored research laboratory.

Every Ph.D. thesis has to be promoted by a full university professor who has the role of principal advisor. The promotor (professor) determines whether the thesis quality suffices and can be submitted to the committee of experts. A committee of experts in the field review the thesis.

Failures at this stage are rare because supervisors withhold inadequate work. The supervisors and promotor lose prestige among their colleagues should they allow a substandard thesis to be submitted.

After reviewer approval, the candidate prints the thesis (generally more than 100 copies) and sends it to colleagues, friends and family with an invitation to the public defense. The degree is awarded in a formal, public, defense session, in which the thesis is defended against critical questions of the “opposition” (the review committee). Failure during this session is possible but in practice never happens. The defense lasts exactly the assigned time slot (45 minutes or 1 hour exactly depending on the University) after which the defense is stopped by the bedel who closes the process. The candidate is allowed to immediately stop the defense.

The doctor’s title is the highest academic degree in the Netherlands. In research doctorates the degree is always Ph.D. with no distinction between disciplines. Three Dutch universities of technology (Eindhoven University of Technology, Technical University Delft, and University of Twente) also award a (lower ranked) Professional Doctorate in Engineering (PDEng).

Although the title doctor is informally called Ph.D., legally no Ph.D. degree exists. All other university titles (B.Sc./B.Ba./LL.B./B.A. M.Sc./M.B.A./LL.M./M.A.) are protected by law, while Ph.D. is not. Any person thus can adopt the Ph.D. title, but not the doctor title, which is protected. Those who obtained a degree in a foreign country can only use the Dutch title *drs. mr. ir. or dr.* if approved by the *Dienst Uitvoering Onderwijs* though according to the opportunity principle, little effort monitors such frauds. Dutch doctors may use the letter D behind their name instead of the uncapitalized shortcut *dr.* before their name.

Those who have multiple doctor (*dr.*) titles may use the title *dr.mult.* Those who have received *honoris causa* doctorates may use *dr.h.c.* before their own name.

In Belgium’s Flemish Community the *doctorandus* title was only used by those who actually started their doctoral work. *Doctorandus* is still used as a synonym for a Ph.D. student. The *licentiaat* (licensee) title was in use for a regular graduate until the Bologna reform changed the *licentiaat* degree to the master’s degree (the Bologna reform abolished the two-year *kandidaat* degree and introduced a three-year academic bachelor’s degree instead).

Russia

In the Russian Empire the academic degree “doctor of the sciences” (*doktor nauk*) marked the highest academic degree that can be achieved by an examination. (The “*doktor nauk*” degree was introduced in Russia in 1819, abolished in 1917, and revived in the USSR in 1934.) This system was generally adopted by the USSR/Russia and many post-Soviet countries. A lower degree, “candidate [doctor] of the sciences” (*kandidat nauk*; first introduced in the USSR on January 13, 1934, by a decision of the Council of People’s Commissars of the USSR), is, roughly, the Russian equivalent to the research doctorate in other countries.

Spain

Doctoral degrees are regulated by Royal Decree (R.D. 778/1998), *Real Decreto* (in Spanish). They are granted by the University on behalf of the King. Its Diploma has the force of a public document.

The Ministry of Science keeps a National Registry of theses called TESEO. According to the National Institute of Statistics (INE), less than 5% of M.Sc. degree holders are admitted to Ph.D. programmes.



The ancient ceremony of bestowing Complutense's Doctoral biretta.

All doctoral programs are research-oriented. A minimum of 4 years of study is required, divided into 2 stages:

- A 2-year (or longer) period of studies concludes with a public dissertation presented to a panel of 3 Professors. Upon approval from the university, the candidate receives a “Diploma de Estudios Avanzados” (part qualified doctor, equivalent to M.Sc.). From 2008 it is possible to substitute the former diploma by a recognized master program.
- A 2-year (or longer) research period includes extensions for up to 10 years. The student must present a thesis describing a discovery or original contribution. If approved by his thesis director, the study is presented to a panel of 5 distinguished scholars. Any Doctor attending the public defense is allowed to challenge the candidate with questions. If approved, the candidate receives the doctorate. Four marks used to be granted: Unsatisfactory (*Suspensio*), Pass (*Aprobado*), Remarkable (*Notable*), “Cum laude” (*Sobresaliente*), and “Summa cum laude” (*Sobresaliente Cum Laude*). Those Doctors granted their degree “Summa Cum Laude” were allowed to apply for an “Extraordinary Award”.

Since September 2012 and regulated by Royal Decree (R.D. 99/2011) (in Spanish), three marks can be granted: Unsatisfactory (*No apto*), Pass (*Apto*) and “Cum laude” (*Apto Cum Laude*) as maximum mark. In the public defense the doctor is notified if the thesis has passed or not passed. The *Apto Cum Laude* mark is awarded after the public defense as the result of a private, anonymous vote. Votes are verified by the University. A unanimous vote of the reviewers nominates Doctors granted “Apto Cum Laude” for an “Extraordinary Award” (*Premio Extraordinario de Doctorado*).

In the same Royal Decree the initial 3-year study period was replaced by a Research master's degree (one or two years; Professional master's degrees do not grant direct access to Ph.D. Programs) that concludes with a public dissertation called “Trabajo de Fin de Máster” or “Proyecto de Fin de Máster”. An approved project earns a master's degree that grants access to a Ph.D. program and initiates the period of research.

A doctorate is required in order to teach at the University.

Only Ph.D. holders, Grandees and Dukes can sit and cover their heads in the presence of the King.

Complutense University was the only one in Spain authorised to confer the doctorate. This law

remained in effect until 1954, when the University of Salamanca joined in commemoration of its septecentenary. In 1970, the right was extended to all Spanish universities.

All doctorate holders are reciprocally recognised as equivalent in Germany and Spain (according to the “Bonn Agreement of November 14, 1994”).

United Kingdom

History of the UK doctorate

The doctorate has long existed in the UK as, originally, the second degree in divinity, law, medicine and music. But it was not until the late 19th century that the research doctorate, now known as the higher doctorate, was introduced. The first higher doctorate was the Doctor of Science at Durham University, introduced in 1882. This was soon followed by other universities, including the University of Cambridge establishing its ScD in the same year, the University of London transforming its DSc from an advanced study course to a research degree in 1885, and the University of Oxford establishing its Doctor of Letters (DLitt) in 1900.

The PhD was adopted in the UK following a joint decision in 1917 by British universities, although it took much longer for it to become established. Oxford became the first university to institute the new degree, although naming it the DPhil. The PhD was often distinguished from the earlier higher doctorates by distinctive academic dress. At Cambridge, for example, PhDs wear a master’s gown with scarlet facings rather than the full scarlet gown of the higher doctors, while the University of Wales gave PhDs crimson gowns rather than scarlet. Professional doctorates were introduced in Britain in the 1980s and 1990s. The earliest professional doctorates were in the social sciences, including the Doctor of Business Administration (DBA), Doctor of Education (EdD) and Doctor of Clinical Psychology (DClinPsy).

British Doctorates Today

Today, except for those awarded *honoris causa*, all doctorates granted by British universities are research doctorates, in that their main (and in many cases only) component is the submission of an extensive and substantial thesis or portfolio of original research, examined by an expert panel appointed by the university. UK doctorates are categorised as:

Junior doctorates

1. *Subject specialist doctorates* – normally PhD/DPhil; the most common form of doctorate
 - *Integrated subject specialist doctorates* – integrated PhDs including teaching at master’s level
2. *Doctorates by publication* – PhD by Published Works; only awarded infrequently
3. *Professional and practice-based (or practitioner) doctorates* – e.g. EdD, ProfDoc/ DProf, EngD, etc.; usually include taught elements and have a professional, rather than academic, orientation

Higher doctorates

e.g. DD, LLD, DSc, DLitt; higher level than junior doctorates, usually awarded either for a substantial body of work over an extended period or as Honorary degrees.

The Quality Assurance Agency states in the Framework for Higher Education Qualifications of UK Degree-Awarding Bodies (which covers junior doctorates but not higher doctorates) that:

Doctoral Degrees are Awarded To Students Who Have Demonstrated:

- the creation and interpretation of new knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the discipline, and merit publication
- a systematic acquisition and understanding of a substantial body of knowledge which is at the forefront of an academic discipline or area of professional practice
- the general ability to conceptualise, design and implement a project for the generation of new knowledge, applications or understanding at the forefront of the discipline, and to adjust the project design in the light of unforeseen problems
- a detailed understanding of applicable techniques for research and advanced academic enquiry

In the UK, the (junior) doctorate is a qualification awarded at FHEQ level 8/level 12 of the FQHEIS on the national qualifications frameworks. The higher doctorates are stated to be “A higher level of award”, which is not covered by the qualifications frameworks.

Subject Specialist Doctorates

These are the most common doctorates in the UK and are normally awarded as PhDs. While the master/apprentice model was traditionally used for British PhDs, since 2003 courses have become more structured, with students taking courses in research skills and receiving training for professional and personal development. However, the assessment of the PhD remains based on the production of a thesis or equivalent and its defence at a *viva voce* oral examination, normally held in front of at least two examiners, one internal and one external. Access to PhDs normally requires an upper second class or first class bachelor's degree, or a master's degree. Courses normally last three years, although it is common for students to be initially registered for MPhil degrees and then formally transferred onto the PhD after a year or two. Students who are not considered likely to complete a PhD may be offered the opportunity to complete an MPhil instead.

Integrated doctorates, originally known as ‘New Route PhDs’, were introduced from 2000 onwards. These integrate teaching at master's level during the first one or two years of the degree, either alongside research or as a preliminary to starting research. These courses usually offer a master's-level exit degree after the taught causes are completed. While passing the taught elements is often required, examination of the final doctorate is still by thesis (or equivalent) alone. The duration of integrated doctorates is a minimum of four years, with three years spent on the research component.

In 2013, Research Councils UK issued a ‘Statement of Expectations for Postgraduate Training’, which lays out the expectations for training in PhDs funded by the research councils. In the latest version (2016), issued together with Cancer Research UK, the Wellcome Trust and the British Heart Foundation, these include the provision of careers advice, in-depth advanced training in the subject area, provision of transferable skills, training in experimental design and statistics, training in good research conduct, and training for compliance with legal, ethical and professional frameworks. The statement also encourages peer-group development through cohort training and/or Graduate schools.

Higher Doctorates

Higher doctorates are awarded in recognition of a substantial body of original research undertaken over the course of many years. Typically the candidate submits a collection of previously published, peer-refereed work, which is reviewed by a committee of internal and external academics who decide whether the candidate deserves the doctorate. The higher doctorate is similar in some respects to the habilitation in some European countries. However, the purpose of the award is significantly different. While the habilitation formally determines whether an academic is suitably qualified to be a university professor, the higher doctorate does not qualify the holder for a position but rather recognises their contribution to research.

Higher doctorates were defined by the UK Council for Graduate Education (UKCGE) in 2013 as:

an award that is at a level above the PhD (or equivalent professional doctorate in the discipline), and that is typically gained not through a defined programme of study but rather by submission of a substantial body of research-based work.

In terms of number of institutions offering the awards, the most common doctorates of this type in UKCGE surveys carried out in 2008 and 2013 were the Doctor of Science (DSc), Doctor of Letters (DLitt), Doctor of Law (LLD), Doctor of Music (DMus) and Doctor of Divinity (DD); in the 2008 survey the Doctor of Technology (DTech) tied with the DD. The DSc was offered by all 49 responding institutions in 2008 and 15 out of 16 in 2013 and the DLitt by only one less in each case, while the DD was offered in 10 responding institutions in 2008 and 3 in 2013. In terms of number of higher doctorates awarded (not including honorary doctorates) the DSc was most popular, but the number of awards was very low: the responding institutions had averaged an award of at most one earned higher doctorate per year over the period 2003 - 2013.

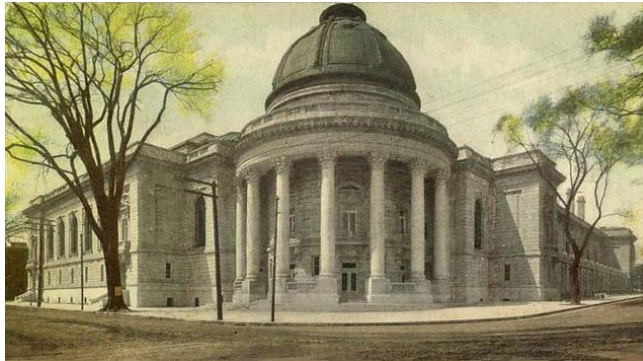
Honorary Degrees

Most British universities award degrees *honoris causa* to recognise individuals who have made a substantial contribution to a particular field. Usually an appropriate higher doctorate is used in these circumstances, depending on the candidate’s achievements. However, some universities differentiate between honorary and substantive doctorates, using the degree of Doctor of the University (D.Univ.) for these purposes, and reserve the higher doctorates for formal academic research.

United States

The structure of US doctoral programs is more formal and complex than some others. US re-

search doctorates are awarded for successfully completing and defending independent research presented in the form of a dissertation, along with advanced study. Multiple professional degrees use the term “doctor” in their title, such as Juris Doctor and Doctor of Medicine, but these degrees do not always contain an independent research component or always require a dissertation and should not be confused with Ph.D./D.Phil./Ed.D./D.Ed. degrees or other research doctorates. Many universities offer Ph.D./D.Phil. followed by a professional doctorate or joint Ph.D./D.Phil. with the professional degree. Most often, Ph.D. work comes sequential to the professional degree, e.g., Ph.D./D.Phil. in law after a J.D. or equivalent in physical therapy after DPT, in pharmacy after Pharm.D. Such professional degrees are referred to as an entry level doctorate program and Ph.D. as a post-professional doctorate.



In 1861, Yale University awarded the first Doctor of Philosophy (Ph.D.) degree in the United States.

Research Degrees

The most common research doctorate is the Doctor of Philosophy (Ph.D. or D.Phil.). This degree was first awarded in the U.S. at the 1861 Yale University commencement. The University of Pennsylvania followed in 1871, and Cornell (1872), Harvard (1873), Michigan (1876) and Princeton (1879) followed suit. Unlike the introduction of the professional doctorate M.D., considerable controversy and opposition followed the introduction of the Ph.D. into the U.S. educational system, lasting into the 1950s, as it was seen as an unnecessary artificial transplant from a foreign (Germany) educational system, which corrupted a system based on England’s Oxbridge model.

Ph.D.s and other research doctorates in the U.S. typically entail successful completion of pertinent classes, passing a comprehensive examination, and defending a dissertation.

The median number of years for completion of US doctoral degrees is seven. Doctoral applicants were previously required to have a master’s degree, but many programs accept students immediately following undergraduate studies. Many programs gauge the potential of a student applying to their program and grant a master’s degree upon completion of the necessary Ph.D. course work. When so admitted, the student is expected to have mastered the material covered in the master’s degree despite not holding one, though this tradition is under heavy criticism. Finishing Ph.D. qualifying exams confers Ph.D. candidate status, allowing dissertation work to begin.

The International Affairs Office of the U.S. Department of Education listed over 20 “frequently” awarded research doctorate titles accepted by the National Science Foundation (NSF) in 2008 as representing degrees equivalent in research content to the Ph.D. The current NSF list of research

doctorates included in the annual Survey of Earned Doctorates, contains 18 awards, although not all programs leading to awards on the list are necessarily considered research doctorates. The Doctor of Music and Doctor of Industrial Technology were dropped in 2008 and most Doctor of Education programs were removed in 2010 and 2011 (although some remain on the list), after it was determined that these were professional, rather than research, doctorates.

Professional Degrees

Many fields offer professional doctorates, such as pharmacy, medicine, public health, dentistry, optometry, psychology, speech-language pathology, physical therapy, occupational therapy, health science, advanced practice registered nurse, chiropractic, naturopathic medicine, law, architecture, education, teaching, business, management, and others that require such degrees for licensure. Some of these degrees are also termed “first professional degrees,” since they are also the first field-specific doctoral degrees.

A Doctor of Pharmacy is awarded as the professional degree in Pharmacy replacing a Bachelor’s. It is the only professional pharmacy degree awarded in the US. Pharmacy programs vary in length between 4 years for matriculants with a B.S./B.A. to 6 years for others.

In the twenty-first century professional doctorates appeared in other fields, such as the Doctor of Audiology in 2007. Advanced Practice Registered Nurses were expected to completely transition to the Doctor of Nursing Practice by 2015, and physical therapists to the Doctor of Physical Therapy by 2020. Professional associations play a central role in this transformation amid criticisms on the lack of proper criteria to assure appropriate rigor. In many cases Masters level programs were relabeled as doctoral programs.

Revocation

A doctoral degree can be revoked or rescinded by the university that awarded it. Possible reasons include plagiarism, criminal or unethical activities of the author, or malfunction or manipulation of academic evaluation processes.

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Right to Education: An Important Aspect of Study

Right to education has been declared a universal human right and is to be provided free at primary and secondary levels if possible. It enables a person the right to free and compulsory education at the primary level as well as the right to seek secondary education, if he/she chooses as such. It also seeks to dismantle discrimination of all kinds in the educational sphere. This chapter discusses the methods of education in a critical manner providing key analysis to the subject matter.

Right to Education

The right to education is a universal entitlement to education. This is recognized in the International Covenant on Economic, Social and Cultural Rights as a human right that includes the right to free, compulsory primary education for all, an obligation to develop secondary education accessible to all, in particular by the progressive introduction of free secondary education, as well as an obligation to develop equitable access to higher education, ideally by the progressive introduction of free higher education. Today, almost 70 million children across the world are prevented from going to school each day.

The right to education also includes a responsibility to provide basic education for individuals who have not completed primary education. In addition to these access to education provisions, the right to education encompasses the obligation to rule out discrimination at all levels of the educational system, to set minimum standards and to improve the quality of education.

International Legal Basis

The right to education is reflected in international law in Article 26 of the Universal Declaration of Human Rights and Articles 13 and 14 of the International Covenant on Economic, Social and Cultural Rights. Article 26 states, “Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit. Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace. Parents have a prior right to choose the kind of education that shall be given to their children.”

The right to education has been reaffirmed in the 1960 UNESCO Convention against Discrimination in Education, the 1981 Convention on the Elimination of All Forms of Discrimination Against

Women, the 2006 Convention on the Rights of Persons with Disabilities and the African Charter on Human and Peoples' Rights.

In Europe, Article 2 of the first Protocol of 20 March 1952 to the European Convention on Human Rights states that the right to education is recognized as a human right and is understood to establish an entitlement to education. According to the International Covenant on Economic, Social and Cultural Rights, the right to education includes the right to free, compulsory primary education for all, an obligation to develop secondary education accessible to all in particular by the progressive introduction of free secondary education, as well as an obligation to develop equitable access to higher education in particular by the progressive introduction of free higher education. The right to education also includes a responsibility to provide basic education for individuals who have not completed primary education. In addition to these access to education provisions, the right to education encompasses also the obligation to eliminate discrimination at all levels of the educational system, to set minimum standards and to improve quality. The European Court of Human Rights in Strasbourg has applied this norm for example in the Belgian linguistic case. Article 10 of the European Social Charter guarantees the right to vocational education.

Definition

Education narrowly refers to formal institutional instructions. Generally, international instruments use the term in this sense and the right to education, as protected by international human rights instruments, refers primarily to education in a narrow sense. The 1960 UNESCO Convention against Discrimination in Education defines education in Article 1(2) as: "all types and levels of education, (including) access to education, the standard and quality of education, and the conditions under which it is given."

In a wider sense education may describe "all activities by which a human group transmits to its descendants a body of knowledge and skills and a moral code which enable the group to subsist". In this sense education refers to the transmission to a subsequent generation of those skills needed to perform tasks of daily living, and further passing on the social, cultural, spiritual and philosophical values of the particular community. The wider meaning of education has been recognised in Article 1(a) of UNESCO's 1974 *Recommendation concerning Education for International Understanding, Co-operation and Peace and Education relating to Human Rights and Fundamental Freedoms*. The article states that education implies:

"the entire process of social life by means of which individuals and social groups learn to develop consciously within, and for the benefit of, the national and international communities, the whole of their personal capabilities, attitudes, aptitudes and knowledge."

The European Court of Human Rights has defined education in a narrow sense as "teaching or instructions... in particular to the transmission of knowledge and to intellectual development" and in a wider sense as "the whole process whereby, in any society, adults endeavour to transmit their beliefs, culture and other values to the young."

Assessment of Fulfilment

The fulfilment of the right to education can be assessed using the 4 As framework, which asserts

that for education to be a meaningful right it must be available, accessible, acceptable and adaptable. The 4 As framework was developed by the former UN Special Rapporteur on the Right to Education, Katarina Tomasevski, but is not necessarily the standard used in every international human rights instrument and hence not a generic guide to how the right to education is treated under national law.

The 4 As framework proposes that governments, as the prime duty-bearers, have to respect, protect and fulfil the right to education by making education available, accessible, acceptable and adaptable. The framework also places duties on other stakeholders in the education process: the child, which as the privileged subject of the right to education has the duty to comply with compulsory education requirements, the parents as the 'first educators', and professional educators, namely teachers.

The 4 As have been further elaborated as follows:

- **Availability** – funded by governments, education is universal, free and compulsory. There should be proper infrastructure and facilities in place with adequate books and materials for students. Buildings should meet both safety and sanitation standards, such as having clean drinking water. Active recruitment, proper training and appropriate retention methods should ensure that enough qualified staff is available at each school.
- **Accessibility** – all children should have equal access to school services, regardless of gender, race, religion, ethnicity or socio-economic status. Efforts should be made to ensure the inclusion of marginalized groups including children of refugees, the homeless or those with disabilities in short there should be universal access to education i.e. access to all. There should be no forms of segregation or denial of access to any students. This includes ensuring that proper laws are in place against any child labour or exploitation to prevent children from obtaining primary or secondary education. Schools must be within a reasonable distance for children within the community, otherwise transportation should be provided to students, particularly those that might live in rural areas, to ensure ways to school are safe and convenient. Education should be affordable to all, with textbooks, supplies and uniforms provided to students at no additional costs.
- **Acceptability** – the quality of education provided should be free of discrimination, relevant and culturally appropriate for all students. Students should not be expected to conform to any specific religious or ideological views. Methods of teaching should be objective and unbiased and material available should reflect a wide array of ideas and beliefs. Health and safety should be emphasized within schools including the elimination of any forms of corporal punishment. Professionalism of staff and teachers should be maintained.
- **Adaptability** – educational programs should be flexible and able to adjust according to societal changes and the needs of the community. Observance of religious or cultural holidays should be respected by schools in order to accommodate students, along with providing adequate care to those students with disabilities.

A number of international NGOs and charities work to realise the right to education using a rights-based approach to development.

Historical Development

In Europe, before the Enlightenment of the eighteenth and nineteenth century, education was the responsibility of parents and the church. With the French and American Revolution education was established also as a public function. It was thought that the state, by assuming a more active role in the sphere of education, could help to make education available and accessible to all. Education had thus far been primarily available to the upper social classes and public education was perceived as a means of realising the egalitarian ideals underlining both revolutions.

However, neither the American Declaration of Independence (1776) nor the French Declaration of the Rights of Man (1789) protected the right to education as the liberal concepts of human rights in the nineteenth century envisaged that parents retained the primary duty for providing education to their children. It was the states obligation to ensure that parents complied with this duty, and many states enacted legislation making school attendance compulsory. Furthermore, child labour laws were enacted to limit the number of hours per day children could be employed, to ensure children would attend school. States also became involved in the legal regulation of curricula and established minimum educational standards.

In *On Liberty* John Stuart Mill wrote that an “education established and controlled by the State should only exist, if it exists at all, as one among many competing experiments, carried on for the purpose of example and stimulus to keep the others up to a certain standard of excellence.” Liberal thinkers of the nineteenth century pointed to the dangers to too much state involvement in the sphere of education, but relied on state intervention to reduce the dominance of the church, and to protect the right to education of children against their own parents. In the latter half of the nineteenth century, educational rights were included in domestic bills of rights. The 1849 *Paulskirchenverfassung*, the constitution of the German Empire, strongly influenced subsequent European constitutions and devoted Article 152 to 158 of its bill of rights to education. The constitution recognised education as a function of the state, independent of the church. Remarkable at the time, the constitution proclaimed the right to free education for the poor, but the constitution did not explicitly require the state to set up educational institutions. Instead the constitution protected the rights of citizens to found and operate schools and to provide home education. The constitution also provided for freedom of science and teaching, and it guaranteed the right of everybody to choose a vocation and train for it.

The nineteenth century also saw the development of socialist theory, which held that the primary task of the state was to ensure the economic and social well-being of the community through government intervention and regulation. Socialist theory recognised that individuals had claims to basic welfare services against the state and education was viewed as one of these welfare entitlements. This was in contrast to liberal theory at the time, which regarded non-state actors as the prime providers of education. Socialist ideals were enshrined in the 1936 Soviet Constitution, which was the first constitution to recognise the right to education with a corresponding obligation of the state to provide such education. The constitution guaranteed free and compulsory education at all levels, a system of state scholarships and vocational training in state enterprises. Subsequently the right to education featured strongly in the constitutions of socialist states. As a political goal, right to education was declared in F. D. Roosevelt’s 1944 speech on the Second Bill of Rights.

Implementation

International law does not protect the right to pre-primary education and international documents generally omit references to education at this level. The Universal Declaration of Human Rights states that everyone has the right to education, hence the right applies to all individuals, although children are considered as the main beneficiaries.

The rights to education are separated into three levels:

- **Primary (Elemental or Fundamental) Education.** This shall be compulsory and free for any child regardless of their nationality, gender, place of birth, or any other discrimination. Upon ratifying the International Covenant on Economic, Social and Cultural Rights States must provide free primary education within two years.
- **Secondary (or Elementary, Technical and Professional in the UDHR) Education** must be generally available and accessible.
- **Higher Education (at the University Level)** should be provided according to capacity. That is, anyone who meets the necessary education standards should be able to go to university.

Both secondary and higher education shall be made accessible “by every appropriate means, and in particular by the progressive introduction of free education”.

Compulsory Education

The realisation of the right to education on a national level may be achieved through compulsory education, or more specifically free compulsory primary education, as stated in both the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights.

Compulsory Education

Compulsory education refers to a period of education that is required of all persons and is imposed by law. Depending on the country, this education may take place at a registered school (schooling) or at home (homeschooling).

History of Education

Antiquity

Compulsory education was not unheard of in ancient times. However instances are generally tied to royal, religious or military organization -- substantially different from modern notions of compulsory education.

Hellenic

Plato's *The Republic* (c. 424–c. 348 BCE) is credited with having popularized the concept of compulsory education in Western intellectual thought. Plato's rational was straight-forward. The ideal city would

require ideal individuals, and ideal individuals would require an ideal education. Popularization of Plato's ideas began with the wider Renaissance and the translation of Plato's works by Marsilio Ficino (1433–1499), culminating in the Enlightenment. The Enlightenment philosopher Jean-Jacques Rousseau, known for his own work on education, *Emile, or On Education* had said *To get a good idea of public education, read Plato's Republic. It is not a political treatise, as those who merely judge books by their title think, but it is the finest, most beautiful work on education ever written.*

In Sparta boys between the age 6 and 7 left their homes and were sent to military school. School courses were harsh and have been described as a “brutal training period”. Between the age of 18 and 20, Spartan males had to pass a test that consisted of fitness, military ability, and leadership skills. A student's failure meant a forfeiture of citizenship (*perioidos*) and political rights. Passing was a right of passage to manhood and citizenry, in which he would continue to serve in the military and train as a soldier until he age 60, when the soldier could retire to live with his family.

Judea

Every parent in Judea since ancient times was required to teach their children at least informally. Over the centuries, as cities, towns and villages developed, a class of teachers called Rabbis evolved. According to the Talmud (tractate *Bava Bathra 21a*), which praises the sage Joshua ben Gamla with the institution of formal Jewish education in the 1st century AD, Ben Gamla instituted schools in every town and made formal education compulsory from age 6-7.

Medieval Era

The Aztec Triple Alliance, which ruled from 1428 to 1521 in what is now central Mexico, is considered to be the first state to implement a system of universal compulsory education.

Early Modern Era

The Protestant Reformation prompted the establishment of compulsory education for boys and girls, first in regions that are now part of Germany, and later in Europe and in the United States.

Martin Luther's seminal text *An die Ratsherren aller Städte deutschen Landes* (1524) called for establishing compulsory schooling so that all parishioners would be able to read the Bible by themselves. The Protestant South-West of the Holy Roman Empire soon followed suit. In 1559, the German Duchy Wuerttemberg established a compulsory education system for boys. In 1592, the German Duchy Palatinate-Zweibrücken became the first territory in the world with compulsory education for girls and boys, followed in 1598 by Strasbourg, then a free city of the Holy Roman Empire and now part of France.

In Scotland, the School Establishment Act of 1616 commanded every parish to establish a school for everyone paid for by parishioners. The Parliament of Scotland confirmed this with the Education Act of 1633 and created a local land-based tax to provide the required funding. The required majority support of parishioners, however, provided a tax evasion loophole which heralded the Education Act of 1646. The turmoil of the age meant that in 1661 there was a temporary reversion to the less compulsory 1633 position. However, in 1696 a new Act re-established the compulsory provision of a school in every parish with a system of fines, sequestration, and direct government implementation as a means of enforcement where required.

In the United States, following Luther and other Reformers, the Separatist Congregationalists who founded Plymouth Colony in 1620, obliged parents to teach their children how to read and write. The Massachusetts School Laws, three legislative acts enacted in the Massachusetts Bay Colony in 1642, 1647, and 1648, are commonly regarded as the first steps toward compulsory education in the United States. The 1647 law, in particular, required every town having more than 50 families to hire a teacher, and every town of more than 100 families to establish a school. The Puritan zeal for learning was reflected in the early and rapid rise of educational institutions; e.g., Harvard College was founded as early as 1636.

Prussia implemented a modern compulsory education system in 1763. It was introduced by the Generallandschulreglement, a decree of Frederick the Great in 1763-5. The Generallandschulreglement, authored by Johann Julius Hecker, asked for all young citizens, girls and boys, to be educated from age 5 to age 13-14 and to be provided with a basic outlook on (Christian) religion, singing, reading and writing based on a regulated, state-provided curriculum of text books. The teachers, often former soldiers, were asked to cultivate silk worms to make a living besides contributions from the local citizens and municipalities.

In Austria, Hungary and the Lands of the Bohemian Crown (Czech lands), mandatory primary education was introduced by Empress Maria Theresa in 1774.

Late Modern Era

Europe

Compulsory school attendance based on the Prussian model gradually spread to other countries. It was quickly adopted by the governments in Denmark-Norway and Sweden, and also in Finland, Estonia and Latvia within the Russian Empire, but it was rejected in Russia itself.

The United Kingdom was slow to introduce compulsory education due to the upper class defending its educational privileges. In England and Wales, the Elementary Education Act of 1870 paved the way for compulsory education by establishing school boards to set up schools in any places that did not have adequate provision. Attendance was made compulsory until age 10 in 1880. The Education Act of 1996 made it an obligation on parents to require children to have a full-time education from age 5 to 16. However, attendance at school itself is not compulsory: Section 7 of the Act allows for home education.

France was equally slow to introduce compulsory education, this time due to conflicts between the secular state and the Catholic Church, and as a result between anti-clerical and Catholic political parties. The first set of Jules Ferry Laws, passed in 1881, made primary education free for girls and boys; communes and departments had the shared responsibility to fund it. In 1882, the second set of Jules Ferry Laws made education compulsory for girls and boys until the age of 13. In 1936, the upper age limit was raised to 14. In 1959, it was further extended to 16.

United States

In 1852, Massachusetts was the first U.S. state to pass a contemporary universal public education law. In particular, the Massachusetts General Court required every town to create and operate a grammar school. Fines were imposed on parents who did not send their children to school,

and the government took the power to take children away from their parents and apprentice them to others if government officials decided that the parents were “unfit to have the children educated properly”.

The spread of compulsory attendance in the Massachusetts tradition throughout the U.S., especially for Native Americans, has been credited to General Richard Henry Pratt. Pratt used techniques developed on Native Americans in a prisoner of war camp in Fort Marion, Augustine, Florida, to force demographic minorities across America into government schools. His prototype was the Carlisle Indian Industrial School in Pennsylvania.

In 1918, Mississippi was the last state to enact a compulsory attendance law.

In 1922 an attempt was made by the voters of Oregon to enact the Oregon Compulsory Education Act, which would require all children between the ages of 8 and 16 to attend State School. Only leaving exceptions for mentally or physically unfit children, exceeding a certain living distance from a state school, or having written consent from a county superintendent to receive private instruction. The law was passed by popular vote but was later ruled unconstitutional by the United States Supreme Court in *Pierce v. Society of Sisters*, determining that “a child is not a mere creature of the state”. This case settled the dispute about whether or not private schools had the right to do business and educate within the United States.

Asia

In Japan, compulsory education was established shortly after the Meiji Restoration in 1868. Initially, it was strongly influenced by the Prussian education system. After World War II, it was rebuilt to a large extent, and the new education model is largely influenced by the American model.

Per-country Variations in the Age Range of Compulsory Education

The following table indicates at what ages compulsory education starts and ends, country by country.

Country	Lower age range	Upper age range	Notes
Argentina	6	14	
Australia	5	15/17	Upper age limit varies among states. Waived if pursuing full-time employment or full-time education.
Belgium	6	18	In Belgium, only compulsory education applies. School is not compulsory.
Brazil	7	14	
Canada	6	16	Except Ontario and New Brunswick: 6-18. Some provinces have exemptions at 14.
China	6	15	
Cyprus	5	15	Compulsory education starts with one mandatory year of pre-primary (preschool) education.
Egypt	6	14	
Finland	7	15	Beginning age is negotiable \pm 1 year. Ends after graduation from comprehensive school, or at least 9 years.

France	6	16	
Germany	6	16	Varies slightly between states.
Haiti	6	11	The Haitian Constitution mandates that education be free of charge. However, even public schools charge substantial fees. 80% of children go to private schools.
Hong Kong	6	17	Hong Kong laws state that education is free for 12 years except for private schools or subsidized schools.
Hungary	3	16	Since 2015, kindergarten is compulsory from age 3, although exceptions are made for developmental reasons.
India	6	14	The Right of Children to Free and Compulsory Education Act in August 2009 made education free and compulsory for children aged between 6 and 14.
Indonesia	6	15	
Israel	3	18	Compulsory education law is not enforced until the age of 5, as an official governmental policy since 1984 (renewed year to year).
Iran	6	12	
Italy	6	16	
Jamaica	5	16	Parents could face charges of Child Neglect if they prevent their children from going to school without valid reasons. Not enforced.
Japan	6	15	
Malaysia	6	12	
Mexico			Schooling is required through upper secondary school (Preparatoria).
Morocco	6	15	
Netherlands	5	18	Students are allowed to leave early after obtaining their 'start qualification' (MBO level 2, HAVO or VWO degree).
Norway	6	15	A total of ten years (of study, and not schooling, as suggested here), where Primary school is year 1-7 (without grades), and Lower Secondary school (with grades) is year 8-10.
Poland	6	18	Polish law distinguishes between compulsory school (obowiązek szkolny) and compulsory education (obowiązek nauki).
Portugal	6	18	It is the law that children living in Portugal (if there for 4 months or more) must go to school. Home schooling is available with registration at a school and quarterly examinations in the Portuguese curriculum only.
Russia	6	17	Student may leave after age 15 with the approval of parents and the local authority.
Slovenia	6	15	
Singapore	7	15	Children with special needs are excluded from compulsory education.
Spain	6	16	
Syria	6	15	Typical ages for 9 years of compulsory education from grade 1 to grade 9.
Sweden	7	16	
Taiwan	7	18	Typical ages for 12 years of compulsory education (starting from 2014).
Turkey	6	18	From the 1st to the 12th grade, education is compulsory. Starting in the educational year of 2012-2013, an education reform took effect to bring the compulsory education up to the end of high school. The system is commonly referred to as 4+4+4.

United Kingdom	5	18	Requirement is for a full-time education, but attendance at a school is not compulsory (section 7 of The Education Act 1996).
United States	6	17	Varies by state. Beginning age varies 5-8, ending age varies 15-18. In case <i>Wisconsin v. Yoder</i> , the Supreme Court determined in 1972 that Amish children could not be placed under compulsory education laws past the 8th grade.
Uruguay	6	14	
Zimbabwe	6	16	Typical ages for 11 years of compulsory education.

Number of Pupils and Students Enrolled in Compulsory Education

Due to population growth and the proliferation of compulsory education, UNESCO calculated in 2006 that over the subsequent 30 years, more people would receive formal education than in all prior human history.

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All chapters in this book are published with permission under the Creative Commons Attribution Share Alike License or equivalent. Every chapter published in this book has been scrutinized by our experts. Their significance has been extensively debated. The topics covered herein carry significant information for a comprehensive understanding. They may even be implemented as practical applications or may be referred to as a beginning point for further studies.

We would like to thank the editorial team for lending their expertise to make the book truly unique. They have played a crucial role in the development of this book. Without their invaluable contributions this book wouldn't have been possible. They have made vital efforts to compile up to date information on the varied aspects of this subject to make this book a valuable addition to the collection of many professionals and students.

This book was conceptualized with the vision of imparting up-to-date and integrated information in this field. To ensure the same, a matchless editorial board was set up. Every individual on the board went through rigorous rounds of assessment to prove their worth. After which they invested a large part of their time researching and compiling the most relevant data for our readers.

The editorial board has been involved in producing this book since its inception. They have spent rigorous hours researching and exploring the diverse topics which have resulted in the successful publishing of this book. They have passed on their knowledge of decades through this book. To expedite this challenging task, the publisher supported the team at every step. A small team of assistant editors was also appointed to further simplify the editing procedure and attain best results for the readers.

Apart from the editorial board, the designing team has also invested a significant amount of their time in understanding the subject and creating the most relevant covers. They scrutinized every image to scout for the most suitable representation of the subject and create an appropriate cover for the book.

The publishing team has been an ardent support to the editorial, designing and production team. Their endless efforts to recruit the best for this project, has resulted in the accomplishment of this book. They are a veteran in the field of academics and their pool of knowledge is as vast as their experience in printing. Their expertise and guidance has proved useful at every step. Their uncompromising quality standards have made this book an exceptional effort. Their encouragement from time to time has been an inspiration for everyone.

The publisher and the editorial board hope that this book will prove to be a valuable piece of knowledge for students, practitioners and scholars across the globe.

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