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Contents

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The *Indian Educational Review* is a bi-annual journal, brought out by the National Council of Educational Research and Training (NCERT), New Delhi. The Journal publishes articles and researches on educational policies and practices and values material that is useful to practitioners in the contemporary times. The Journal also provides a forum for teachers to share their experiences and concerns about schooling processes, curriculum, textbooks, teaching-learning and assessment practices.

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Editorial

The current issue of *Indian Educational Review* carries five research papers and summaries of two ERIC sponsored research projects. Hindi versions of the abstracts of the research papers have also been included.

The first paper 'Life Skills Education in School Setting: A Review of Research in the Indian Context' by Poonam Tiwari and Anjali Bajpai presents an appraisal of studies on life skills education during 2000–2020 in the Indian context. The review highlights the attempts made to inculcate life skills among school students. In the second paper 'Research on Education for Values in Schools: An Academic Review and Classification', Manish Kumar Srivastava, Harish Chaudhry, Shikha Sota and Anshika Singh Tanwar have analysed more than 500 published researches with a view to find out how value education research has developed during 1995 to 2020 across the globe in terms of sub-themes, research types, and methodologies used. M.G. Jadhav, P.H. Lodhi, P.B. Khavare, A.R. Suryawanshi and S.L. Nandyai in their paper 'Academic Procrastination in Relation to Achievement Values, Self-esteem, Intelligence and Course Stream: A Multivariate Study' found procrastination to be a major factor in achievement values, self-esteem, and intelligence of the students. The paper 'Concept Maps for Teaching-Learning: An Analysis of Teachers' Classroom Practices and Perspectives' by Anjuli Suhane and Vibha Joshi analysed teachers' views about usefulness of the concept maps and its use in the classroom. The study reports that though teachers admitted the usefulness of concept map, its actual use in the classroom was limited. In the last paper, 'Academic Achievement Gap in Different Mathematical Skills/Abilities of Grade V Students', Chandra Kanta Giri and Gowramma I.P. have reported gaps in the expected and actually possessed mathematical abilities of Grade V students.

The summaries of the two completed ERIC research projects have been included in this issue. These are — (i) Investigating the Root Causes of Underachievement among Gifted Underachievers and Adapting Trifocal Model for Reversing their Underachievement by Supreet Kaur, and (ii) Influence of Teacher's Efficacy, Competence and Motivation on their Instructional Strategy: A Study of Secondary School Teachers of English in Jhunjhunu, Rajasthan by Devika Sangwan and Rajni Singh.

The *Indian Educational Review* focusses on enriching the discipline of education by disseminating findings of educational

research, providing opportunities for exchanging research experience among fellow researchers, motivating academicians and providing inputs to all those involved in policy making and planning. Contributions of academicians, researchers and freelancers are cordially invited for the next issue. We seek your suggestions and views for the improvement of this journal and research initiatives.

Academic Editor

Research Papers

Life Skills Education in School Setting

A Review of Research in the Indian Context

POONAM TIWARI* AND ANJALI BAJPAI**

ABSTRACT

Life skills education is linked to almost all areas of human life, such as education, physical education, medical, psychology, mental health, sexual and reproductive health, wellness, environment, etc. Education has an abundant potential to develop life skills wherein, schools play an important role in the inculcation and internalisation of these life skills. So, more understanding is needed of the research held in the school area. The present review examined the literature on the status of life skills education in school settings with the view of gaining a comprehensive understanding and holistic picture of the status of life skills education in Indian schools and identifying research gaps and priorities. Seventy-seven studies were included for review, which was categorised into six different themes through content analysis. Findings reveal that a large number of studies focused on bringing in positive change in students' attitudes and behaviour and enhancing their psychosocial competencies. Studies were also conducted to find out the status of life skills education in Indian schools and the curriculum and strategies to be adopted to internalise these skills. More research is needed to identify the problems with its implications. The review will be helpful in organising enriched programmes with effective life skills training for teachers and develop an effective life skills training module by involving major stakeholders for all the levels of education.

Keywords: *Life Skills Education, Life Skills, Review, Psychosocial Competency, Adolescents.*

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सार

जीवन कौशल शिक्षा मानव जीवन के लगभग सभी क्षेत्रों जैसे शिक्षा, शारीरिक शिक्षा, चिकित्सा, मनोविज्ञान, मानसिक स्वास्थ्य, यौन और प्रजनन स्वास्थ्य, कल्याण, पर्यावरण आदि से जुड़ी हुई है। शिक्षा में जीवन कौशल विकसित करने की प्रचुर क्षमता है। विद्यालय जीवन कौशल के विकास और आंतरिककरण में महत्त्वपूर्ण भूमिका निभाते हैं, इसलिए विद्यालय क्षेत्रा में किए गए शोधों के गहन अध्ययन की आवश्यकता है। वर्तमान समीक्षा, भारतीय विद्यालयों में जीवन कौशल शिक्षा की स्थिति की व्यापक समझ और समग्र चित्र हासिल करने और अनुसंधान अंतराल तथा प्राथमिकताओं की पहचान करने के लिए साहित्य की जाँच पर आधारित है। समीक्षा के लिए 77 अध्ययनों को शामिल किया गया था जिन्हें सामग्री विश्लेषण के माध्यम से छह अलग-अलग विषयों में वर्गीकृत किया गया था। निष्कर्षों से पता चलता है कि लगभग सभी शोधों में छात्र दृष्टिकोण और व्यवहार में सकारात्मक बदलाव लाने और उनकी मनोसामाजिक दक्षताओं को बढ़ाने पर ध्यान केंद्रित किया गया है। भारतीय विद्यालयों में जीवन कौशल शिक्षा की स्थिति और इन कौशलों को आत्मसात करने के लिए अपनाए जाने वाले पाठ्यक्रम और रणनीतियों का पता लगाने के लिए भी कई शोध एवं अध्ययन किए गए हैं। इसके निहितार्थों में समस्याओं की पहचान करने के लिए और अधिक शोध की आवश्यकता है। यह शोध समीक्षा शिक्षकों के लिए प्रभावी जीवन कौशल प्रशिक्षण के साथ-साथ समृद्ध कार्यक्रम आयोजित करने और शिक्षा के सभी स्तरों के लिए प्रमुख हितधारकों को शामिल करके प्रभावी जीवन कौशल प्रशिक्षण मॉड्यूल विकसित करने में सहायक होगी।

Introduction

Life Skills Education

In the present, ever-growing and competitive world, life has become quite challenging, and, thus, in order to keep pace with it, there is a need for the next generation to learn how to adapt with changes. Life skills can help them to do so. By learning and then applying life skills, one will be able to take on life's challenges and complexities with confidence and courage. Life skills education is a basic learning need for all the individuals, which empowers them to face obstacles and maintain balance in adverse situations. It is essential for the promotion of physical, mental, and emotional well-being as well as for individual, social and national development. Life skills education is a general approach which can be applied in all spheres of life, irrespective of age and occupation. However, it assumes more important for adolescents. Adolescence is a transitional phase from childhood to adulthood. It involves rapid psychological changes, maximum physical and mental growth

and development. During this phase many adolescents engage themselves in bad activities, such as alcoholism and drug abuse under constant peer pressure and get diverted from their set goals, leading to anxiety and depression among them. So, dealing with such significant changes requires a lot of mental strength, which can be induced by educating young adults about life skills. Life skills are important for adolescents to enable them to meet life's challenges by enhancing their psychosocial competencies. This will help them to make the right choices and enjoy a healthy state of mind and a successful life.

The Mental Health Promotion and Policy (MHP) team at the World Health Organisation (WHO) Department of Mental Health defined it as, "Life Skills Education is designed to facilitate the practise and reinforcement of psychosocial skills in a culturally and developmentally appropriate way; it contributes to the promotion of personal and social development, the prevention of health and social problems, and the protection of human rights" (WHO, 1999).

United Nations International Children's Emergency Fund (UNICEF, 2016) defined it as, "Life Skills Education is a structured programme of needs — and outcomes-based participatory learning that aims to increase positive and adaptive behaviour by assisting individuals to develop and practice psychosocial skills that minimise risk factors and maximise protective factors. Life Skills Education programmes are theory and evidence-based, learner-focused, delivered by competent facilitators, and appropriately evaluated to ensure continuous improvement of documented results".

Life Skills

Life skills are inborn abilities that can be developed gradually. These abilities have to be developed in individuals by making them aware about their potential and leading them towards excellence by practising. Life skills are important for each and every individual, at any stage of life for enhancing psychosocial competency and accepting the challenges of life in a positive way. WHO, in 1997, defines life skills as — "The abilities for adaptive and positive behaviour that enable the individuals to deal effectively with the demands and challenges of every day life". Here, 'adaptive' means that a person is flexible in approach and is able to adjust in different circumstances and 'positive behaviour' implies that a person is forward looking and can, even in challenging situations, find a ray of hope. United Nations International Children's Emergency Fund

(UNICEF) defines life skills as, "a behaviour change or behaviour development approach designed to address a balance of three areas: knowledge, attitudes and skill. WHO has identified ten core life skills classified into three broad categories—

- Thinking Skills—self-awareness, problem solving, decision making, critical thinking, creative thinking
- Emotional Skills—managing emotions and stress
- Social Skills—interpersonal relationships, communication, empathy

All these skills are interrelated with each other which compliment, supplement and reinforce each other. Life skills are inherent as well as acquired. Inherent life skills are those which an individual inherits by birth, while acquired life skills are those that are taught to an individual or which have been imbibed from others over a period of time. Acquired life skills can be formal and informal. School education plays an important role in cultivating acquired formal life skills among adolescents.

Policies for Life Skills Education

In many parts of the world, life skills form a significant and regular part of school and adult curriculam. In India, life skills education is still at the blooming stage. In last twenty years there has been increasing awareness regarding life skills education and a lot of initiatives have been taken by the government to enhance the life skills education programme at all levels of education. In 2001, the *Sarva Siksha Abhiyaan* (SSA) took the initiative and introduced life skills training for upper primary girls along with providing quality elementary education (Pathak, 2017). The National Curriculum Framework and National Curriculum Framework for Teacher Education (2009) strongly emphasis on life skills education for students and teachers respectively. The NCF 2000 recommended linking education with life skills. Education ideally must prepare students to face the challenges of life. For this, it needs to be intimately linked with different life skills, the abilities for adaptive and positive behaviour (NCF, 2000, p. 17). The NCF 2005 also focussed on life skills and clearly stated that rather than a stand-alone programme, the Adolescent Education Programmes (AEPs) should become an integral part of school education and the responsibility of transacting life skills based education to secondary school students is fixed up on secondary teachers.

The Central Board of Secondary Education (CBSE) introduced life skills education as the integral part of the curriculum for Class VI in 2003–04, Class VII in 2004–05 and subsequently in Classes VIII, IX and X and introduced the assessment of life skills under Continuous and Comprehensive Evaluation (CCE) with grading system during 2010–2016. The CBSE introduced life skills training programme as part of CCE for adolescent students of 10–18 years old in 2012. CBSE also published a *Teacher's Manual for Life Skills for Teachers Handling* (Classes VI to X) in 2013. The teachers were advised to make the best use of these manuals, which provide guidelines for each of the 10 core life skills as identified by WHO. Looking into the importance of life skills for the teachers, the National Curriculum Framework for Teacher Education (NCFTE) strongly emphasised that life skills should be essential for prospective teachers (NCFTE, 2009).

Recently, National Education Policy (NEP, 2020) has laid stress on the importance of life skills. It is based on the principle that education must develop not only cognitive capacities—both the 'foundational capacities' of literacy and numeracy and 'higher-order' cognitive capacities, such as critical thinking and problem solving—but also social, ethical, and emotional capacities and dispositions (NEP 2020, p. 4). Seeing the worth of life skills, in 2020, NEP has included it as one of the fundamental principles that will guide the whole education system. It focused on life skills such as communication, cooperation, teamwork, and resilience; (NEP 2020, p. 5). It also mentions that creativity and critical thinking encourage logical decision-making and innovation (NEP 2020, p. 5). It means NEP 2020 emphasises on the development of creative potential of each individual. Apart from school education, realising importance of life skills for adults, NEP 2020 has also recommended to develop an adult education curriculum enriched with life skills in Adult Education and Life Long Learning. As mentioned in 21.5— critical life skills (including financial literacy, digital literacy, commercial skills, health care and awareness, child care and education, and family welfare) is one of the five types of programmes, that will be included in the curriculum framework for adult education (NEP 2020, p. 51). So, for committing towards human rights, sustainable development and global well-being, developing values is necessary and, therefore, life skills have been given value in the *National Education Policy, 2020.*

Objectives

The study focussed on examining the researches related to life skills education in school setting in India. It particularly aimed at:

- identifying the different themes of researches on life skills education in the school setting,
- studying the outcomes of researches related to identified themes of life skills education, and
- studying the practices (strategies, activities, problems in its implementation) followed for life skills education in schools especially in the Indian context.

Methodology

In order to address the review purpose, the following steps were taken:

- Identification of inclusion and exclusion criteria for article selection
- Identification of the search strategy
- Data extraction—identification of the relevant work
- Data analysis
- Results

Criteria for Inclusion and Exclusion of Articles

This review solely focussed on life skills education in a school setting. The articles related to school, students, adolescents, teachers, curriculam, strategies, factors affecting implementation were included in the study. Articles related to life skills education in the medical field, physical education, sports, the environmental field, mental health, etc., were excluded.

Search Strategy

PhD dissertations, articles published in journals (International and National), newspaper and books were searched, both online as well as offline.

Literature searched online for the present review was done based on the following criteria:

- Research conducted for articles published during 2000–2020;
- Published or unpublished articles related to life skills education in school settings only.

- Keywords, such as life skills, life skills education, life skills education in school, implementation, India, etc., were used for searching the articles.
- Online sites surfed were: Shodhganga, <http://shodhganga.com>; Google Scholar, <https://scholar.google.co.in>; Academic.edu, <http://academic.research.microsoft.com>; Taylor and Francis, <https://www.tandfonline>; Research Gate, <https://www.researchgate.net>, <https://inflibnet.ac.in>, <https://eric.ed.gov>; Sage Journals, <https://journals.sagepub.com>; books, <https://books.google.co.in>.

There is a few offline material available on life skills education in school setting (books, journals, PhD thesis) which were also used for review purpose.

Data Extraction

Relevant studies are extracted from the pool of studies related to life skills education following the inclusion and exclusion criteria for article selection and search strategy. After removal of articles that did not meet the search criteria, 77 studies were included in the review.

Data Analysis

For identifying the themes, interpretation, and outcomes, the searched materials were examined carefully. Content analysis method was used to group the materials into related themes and for further analysis and synthesis of the result.

Results

After visualising the searched materials, six broad themes were identified. The 77 extracted studies were classified into six themes, (Table 1) and their year-wise details are given in Table 2.

Table 1

Number of Studies Reviewed Theme-wise

S.No.	Studies Related to	Number
1.	Life Skills Education and Types of Schools	13
2.	Life Skills Education and Students' Competencies	28
3.	Life Skills Education and Teachers	15
4.	Inclusion of Life Skills Education in Curriculum	07
5.	Strategies used for Life Skills Education	07

6.	Factors Influencing Implementation of Life Skills Education	07
	Total	**77**

Table 2

Number of Studies Reviewed (year-wise)

Year	No. of Studies	Year	No. of Studies
2000–2010	11	2016	23
2011	05	2017	08
2012	06	2018	05
2013	03	2019	03
2014	05	2020	02
2015	06	**Total 77 Studies**	

Numerous studies are available in different areas of life skills but the present review was done only for studies of life skills education related to the school setting. Year-wise analysis of studies indicates that out of 77 studies extracted, only 11 were conducted during 2000–2010, while 25 were done during 2011–2015, however 41 studies were reported from the last five years (2016–2020). This shows that efforts are continuously being made and there seems to be a rise in interest in research in the area of life skills education in school setting in the last decade.

Life Skills Education and Types of Schools

This section covers 13 studies related to life skills education and types of schools; Of these, 11 studies were related to the Indian schools. In a study, Suresh and Subramoniam (2015) revealed that in schools in Kerala, the teachers focussed on the development of arithmetic, writing, and reading skills and considered life skills as non-academic activity. However, some teachers were aware of it, but they were hesitant to speak about it due to time constraint. Soni (2016) also observed similar findings in the secondary schools of Lucknow.

The school environment plays a vital role in developing life skills. Amandeep (2016) conducted a study in Delhi schools and found that schools were practising various essential ways of developing life skills and life skills of public schools' students were

better than that of government school students. In line with this, Kaur, M. (2019) also concluded that the school environment, family environment and socio-economic status play important roles in the betterment of life skills for students. In addition, the study also observed that senior secondary school students of private schools, especially female students studying in urban areas were better at life skills. In a comparative study, Chandra (2016), in the schools of Lucknow, found that private schools provide better opportunities to explore life skills than the government and government-aided schools. Similar type of study was done by Soni (2016) in senior secondary schools of Lucknow and found that the private schools were in a better position and these schools had no time allocation for life skills education. Tiwari (2018) studied the practises followed for life skills education in CBSE schools of Varanasi and observed similar findings. She (Tiwari, 2018) further observed that, majority of the teachers had knowledge about life skills education and *CBSE Life Skills Teacher's Manual.* Students with high life skills and internal locus of control had better well-being and private school students had higher well being as compared to government school students.

Since, CBSE has included life skills education in its curriculum, these students showed a considerable depth of understanding and knowledge of life skills education (Nanaware and Palanethra, 2017) as compared to state board students of Bangaluru. Kushwaha and Bajpai (2019) also noticed similar type of findings in the comparative study of the CBSE and UP board. Behrani (2016) reflected about methods, assessment and problems in the implementation of life skills education programme in CBSE schools in Gujarat. The Gujarat Council of Educational Research and Training (GCERT) and UNICEF had jointly undertaken a project on life skills education during the academic session 2004–05 and implemented them in the primary schools and found that almost all life skills were merged in the contents of the subjects and established a model for life skills education in the state (Pathak, 2017). The content of books selected for study were good and sufficient to inculcate life skills as observed by Chandra (2016) in schools of Lucknow.

Two studies conducted in foreign countries were also included in the review. Bwayo (2014) explored the way life skills education is being implemented in Ugandan primary schools and found that all stakeholders value life skills. Wurdinger, et al. (2020) in a correlational study reported that hope and life skills, such as

self-direction and collaboration positively impact academic achievement in maths as well as reading test scores.

It is evident that despite the emphasis on the National Curriculum Framework (NCF, 2005), schools give more focus on reading, writing and arithmetic skills, schools have no time allocation for life skills education in their schedule. The private schools provide better opportunities to explore life skills than the Government and Government-aided schools. However, the CBSE schools are in a better position as CBSE has implemented it in its co-scholastic part of curriculum. CBSE students showed a considerable depth of understanding and knowledge of life skills education than the State boards, this validates that they have benefitted from a well formulated life skills enhancement programmes as part of CBSE curriculum. However, more studies are needed from other parts of country for comprehensive understanding of the status of life skills education in the school setting.

Life Skills Education and Students' Competencies

Life skills education plays a significant role in influencing varied behaviours of adolescence, such as social behaviour, sexual behaviour, cognitive competencies, and socio-emotional behaviour. Verma (2007) found the life skills programme manual effective for adolescents as it increases knowledge (health, nutrition), skills (to manage stress, relationships and emotions, decision making) and abilities (for leadership, assertiveness and communication). Yadav and Iqbal (2009) also observed positive effects of life skills training an adolescents' attitude, thought, and behaviour, thereby accepting to social adjustment. Akfirat and Kezer (2016) also observed similar findings among primary school Grade IV students. The NIMHANS model of life skills education programme was effective in bringing about significant improvements in adolescents' self-esteem, coping skills, and adjustments (Srikala and Kumar, 2010). Chhadva and Kacker (2013) reported the effectiveness of life skills education in helping adolescents to deal effectively with life's challenges. Parvathy and Pillai (2015) explored the impact of life skills education training on adolescents in rural schools and revealed its significant impact on adolescents. Continuous life skills training along with structured counselling helped in developing positive changes and friendly behaviour among the children showing problems (Bardhan, 2016). Surma (2016) also examined the effectiveness of life skills counselling in enhancing the personality of high school students

and found it effective. Life skills training contributes positively as it equips children with psychosocial competencies that help them to cope up with the school adjustment and academic achievement (Kaur, 2017). Khera and Khosla (2012) found a positive corelation between core effective life skills and the self-concept of adolescents, where adolescents with these essential skills had better confidence in all aspects. Daisy (2018) observed significant relationship among life skills, learning behaviour, self-confidence and presentation skills of adolescents and concluded that life skills intervention has helped adolescents modify their behaviour, which will help them to lead a positive life.

In an exploratory cum intervention study, students showed varied coping skills. The majority of the students were found lacking in reasoning skills, planning leisure time, creative thinking, critical thinking, systemic thinking skills, reflective skills, research skills, learning skills, skills of synergy, skills of problem solving and self-directional skills (Purohit, 2016). Vranda and Rao (2011) mentioned various life skills programmes initiative in India and evaluation of life skills programme and suggested for life skills training as, it enhances the psychosocial competencies of adolescents to become successful and independent in this competitive age. Daisy (2016) in an article mentioned that cognitive, social and emotional skills of children may be negatively affected when they grow up in disadvantaged learning contexts without proper life skills competency and learning of different aspects of life skills, which directly relates to the academic development of adolescents as well.

Life skills practises are found to be effective for adolescent girls in increasing awareness about reproductive health. Rathinasabapathy (2011) observed a change in the level of knowledge and attitude towards reproductive health and enhancement in the perceived level of self-esteem in all domains such as personal, family, social and self-concept in adolescent girls in Puducherry while assessing the effectiveness of a teaching module on selected life skills. Azad (2016) also recommended life skills practises for the alleviation of the socio-economic and traditional causes that hindered the reproductive and sexual well-being of adolescent girls, who are unaware of reproductive health in 10 muslim dominated villages of Assam. Experiential environmental education lays the foundation for developing life skills and pro-environmental

behaviours among adolescents as concluded by Punam (2011) in the experimental study.

J. Kaur and K. Kaur (2016) found life skills as a predictor of attitude of college students towards alcohol and drug abuse. Study depicted a significant and negative relationship between self-awareness, empathy, effective communication and coping with emotional dimensions of life skills and attitude of college students towards alcohol and drug abuse. Kaur, J. (2016) in a corelational study found positive correlation between life skills and the adjustment of university students in Patiala. Mistry (2016) conducted a study in Gujarat to understand the need for career guidance and proposed a road map for strengthening the required set of skills in decision making and self awareness among college students to guide them on the path of career building. Raj and S. Raju (2016) found a significant relationship between life skills and quality of life. In addition, the study revealed no difference in the level of life skills due to age, gender and education of college students. Prakash and Devi (2015) found a moderate level of life skills among undergraduate students and observed significant differences in life skills with respect to the stream of study, medium of instruction, place of living, whether attended any life/ soft skill courses and no significant difference in gender and type of management. Yankey, T. (2011) found life skills training as an effective psychological intervention strategy for promoting social and mental health of Tibetan refugee adolescents studying in India.

The studies carried out in other countries also advocate the necessity of life skills training for adolescents. Magnani et al. (2005) reported that school-based life skills education appears capable of communicating key information and helping youth develop key life skills relevant to reducing sexual risk behaviours of the adolescents in South Africa. Teachers and pupils acknowledged the importance of life skills education in the development of character (Okech and Role, 2015). In Kenya, Salonen et al. (2017) published an article to communicate the reasons behind the lack of interest in choosing science studies and science-related careers by school students in eastern Finland. It revealed that, although students have a great deal of knowledge about working life skills, they need more wide-ranging information about scientific careers and competencies; such information can be acquired by interacting with professionals and observing real working life problems.

Cicily and Jebastina (2016) found that need-based life skills interventions enhanced the adolescents in self-awareness and their capacity to deal with emotions in daily life situations. However, Springs (2002) did not find any significant difference while conducting the effectiveness of life skills training in promoting the positive social behaviour of the students (as cited in Kaur, 2017).

Researchs, thus, report a positive effect on the intervention of life skills education programmes in adolescents, particularly their social adjustment. Mostly, life skills training shows positive results among adolescents as it promotes social and mental health, enhanced their academic performance, reduced anxiety, and reduced high-risk behaviour and developed confidence, strengthened positive behaviour to live a balanced life and helps in preparing them to become better individuals. The preceding reviews clearly indicate the importance of life skills education for the students of all the levels, but more essentially for adolescents, so schools should supplement them with life skills education along with academics.

Life Skills Education and Teachers

Helaiya (2010) implemented a life skills programme for students–teachers, who were weak in many life skills and found it to be very effective. Rawat (2014) found life skills training effective on the teacher-trainees in Lucknow, as it improved their perception of work environment, performance and self-efficacy. Kalaiselvi (2016) found that the life skills programmes enhanced life skills of B.Ed. trainees. Pathak (2017) in his book *Life Skill Oriented Teacher Education* dealt about an experimental research and concluded that life skills education programme is effective for the B.Ed. trainees. It was found significant with respect to the identified basis of the programme, viz., concepts of life, self-concept, personality traits, and role of art—literature and media. Patil (2018) found significant positive effects of life skill enhancement programme in enhancing the life skills of pre-service teachers. In an experimental research, Pandya (2019) concluded that life skills are important for future upliftment. Student-teachers found life skills module activities very interesting for developing life skills. Intervention developed innovative ideas, improved writing skills, thinking power, enhanced confidence level, and creative thinking of student–teachers (Pandya, 2019). A study conducted by Sandhu (2014) revealed that there is a need to train students–teachers by consequently developing

life skills amongst them. Teaching performance can be predicted by correlated variables (life skills) either separately or collectively (Jayachithra, 2015). Victoria (2017) suggested integration of life skills with the teaching profession, especially in pre-service teacher education programmes.

Research has reported the gender differences. Chauhan (2016) found life skills training more effective in the case of male teacher–trainees. On the other hand, it was revealed from the study of Victoria (2017) that female teachers were better at relating life skills with teaching effectiveness, human relations skills and holistic wellness, but in the case of teacher leadership, male teachers were better.

Srivastava (2019) observed a significant linear relationship between digital competence and life skills of higher education teachers. MOOC course had been proved helpful making use of digital tools in the teaching-learning process, which in turn enhanced life skills too (Srivastava, 2019). Dakshinamurthy (2012) in an article, published in *The Hindu* (Life Skill Training for Teachers to help Students) suggested that life skills education training is very important for teachers who prepare young minds (as cited in Kaur, 2017). Gulati (2006) found that life skills education programme strengthened the student-teacher relationships and students became more participative, creative and interactive on life skills training (as cited in Bhawna and Joshi, 2016). The science courses provided significant setting to teach life skills. Teachers used some in class and some with extracurricular activities to teach life skills. It was suggested that teacher training programmes should also contain activities to improve pre-service teachers' and in-service teachers' information and skills concerning life skills (Fidan and Aydoğdu, 2018). Bhawna (2017) reported the effectiveness of computer-aided instruction in enhancing the teacher trainees' achievement in life skills education.

The National Curriculum Framework for Teacher Education (2009) recommended that life skills should be essential for prospective teachers as they transact these life skills to students. Thus, the studies supports that life skills education programme was effective for the teachers at all levels (school, college, and university) across different subjects. Thus, teachers need to update themselves with best quality life skills for transacting it to their students. Teachers need to be competent enough to plan an effective strategy (methodology, tools, techniques and approaches)

to deliver the life skill-related content appropriately. This requires the teachers to be properly trained. As life skills training brought a positive impact on teachers, it is suggested to provide intensive training at both the levels, i.e., in-service and pre-service teacher education with regard to life skills education.

Inclusion of Life Skills Education in Curriculum

The Central Board of Secondary Education has introduced life skills education as an integral part of its curriculum and provides guidelines for transaction of the 10 core life skills to the teachers and developed life skills materials for students too. Bharath (2002) designed and developed three activity manuals (for Classes VIII–X) for teachers on health promotion using a life skills approach with the help of the Child and Adolescent Health and Development unit of WHO—South East Asian Regional Office (SEARO), New Delhi. It is aimed at empowering adolescents with 10 core life skills by providing them with the necessary skills to be facilitators and confidence with the help of experiential learning, using the vehicle of participative activities (as cited in Pathak, 2017). Choudhary and Mehta (2012) found that life skills education programmes helped and empowered adolescents to develop better insights about their physical changes, build self confidence, and gender-related issues among economically backward adolescent belonging to tribal community in Gujarat. This study strongly recommends that this kind of life skills education intervention programme should be made an integral part of the school curriculum. Geeta (2011) also suggested to implement life skills training as the core component of the curriculum at school level. Results from an experimental study highlighted significant and positive effects on the development of life skills among Dyslexic children. Perceptions about the high-level life skills are positively associated with perceptions about the essence of humans and it was suggested that human rights education and life skills education can be successfully integrated in the school curriculum (Sengupta, et al., 2012, cited in Kaur, 2017). Monterio and Shetty (2016) also suggested an effective and creative life skills education package for the curriculum, which can better prepare youth to enter and contribute to a competitive and global workforce. Amalgamation of life skills education with other core school subjects is also important for optimum results. Thote and Mathew (2016) explored the amalgamation of life skills education with language teachings in a private English medium school and

found that seven life skills, out of 18, empirically amalgamated with English language teaching.

NCF 2005 strictly recommends the inclusion of life skills education in school curriculum. It can be designed to be spread across the curriculum, either as a separate subject or can be integrated with the contents. The research, thus, strongly recommends life skills education to be made an integral part of the curriculum, and for which well-formulated life skills enhancement programmes are required. However, the existing studies related to inclusion of life skills education in curriculum advocates that these do not occupy any specific place in the school curriculum. There is an urgent need to implement life skills as the core component of the present curriculum compulsorily in schools of all the boards.

Strategies Used for Life Skills Education

Life skills education need to be imparted in a comprehensive way through viable usage of strategies, exploratory learning approaches, practical and activity oriented teaching and learning process for skill development among youth (Kumar, 2016). Classroom discussions, brainstorming, role plays, small group/buzz group, educational games and simulations, storytelling, debates, situation analyses and case studies have been found effective in the classroom setting (Kumar P., 2017; Nivedita and Singh, 2016; Prajapati, et al. 2017; Tiwari and Bajpai, 2018). These strategies are also suggested in *The Teachers' Manual for Life Skills Education and CCE of IX and X* (pp. 10–15).

Peer tutoring approach along with strategies like brainstorming, role-plays, small groups, games and simulations, situational analyses and case studies, storytelling, debate for imparting life skills education to the adolescents are mentioned in an article by Saravana Kumar and Devi, (2020). Nagaraju (2016) also supported the peer educator approach. It was suggested that the peer educator approach needs to be integrated with syllabi and materials development, transaction of materials, organisation of learning experiences and evaluation in imparting life skills education to the adolescents in order to build the skill India. There is an urgent need to train and prepare a large contingent of 'trainers of trainers' (TOTs) and different teaching methods have been suggested by Sharma (2012) that can be used to enhance life skills among students.

Further, constructive approach as a more effective and appropriate approach facilitates students for developing life skills

(Yadav and Kesharwani, 2017). The researchers specified some important and major constructivist methods like Distributed Cognition Method and Co-operative Learning Method—class discussion, brainstorming, storytelling, debates, situation analyses or case study methods and other creative methods (role play, games, poetry recitation, dance and music).

On an international level, the participatory teaching-learning methods are recommended for the teaching of life skills education (Abobo 2012). Abobo (2012) further included case studies, brainstorming, field visits, panel discussions, storytelling, music, group discussion, debates, posters, role-plays, games, projects, poetry recitals, and drama for enhancing life skills. According to studies of Adhiambo (2013) the use of discussion and case studies were the major teaching activities and role-plays, games and storytelling were also used in giving life skills education in secondary schools. Existing reviews highlight that teachers adapt participatory, experiential, facilitative pedagogy, and innovative practices for its transaction among students.

Adoption of a variety of strategies (methodology, tools, techniques and approaches) that facilitate life skills transaction can facilitate its internalisation among students. Strategies like classroom discussion, brainstorming, role-plays, small group or buzz group, educational games and simulations, storytelling, debates, peer education, situation analyses and case studies have been found effective.

Factors Influencing Implementation of Life Skills Education

Exploring the awareness and application of life skills education, James (2010) identified problems faced by the teachers, such as lack of time, funds, and life skills materials. Adhiambo (2013) also identified the factors for effective implementation of life skills education as lack of qualified teachers, time, syllabus, textbooks and other materials necessary for learning. Mugambi and Muthui (2013) also found several factors, such as teaching approaches, poor conceptualisation of life skills, limited human resource, lack of supervision, poor teacher preparation, poor choice of teaching learning strategies, limited use of instructional resources, poor assessment methods, and negative attitude of students towards life skills. Abobo (2012) while studying the factors focussing on implementation of life skills education observed that most teachers had not been trained on life skills education. Teachers had negative attitude while students had positive attitude towards life skills

education. Abobo and Orodho (2014) also noticed that most teachers had not been trained on life skills education. Wairimu (2015) found lack of training in teaching methodologies in life skills education and recommended that teachers and head teachers need to be provided training for effective implementation. Githaiga et al. (2014) revealed that there is inadequate attention of teachers towards life skills education due to heavy workload and under staffing. Some other reasons included the level of preparedness by teachers and school managers, which was fairly low and this hampered effective implementation of life skills education (Abobo and Orodho, 2014).

Tiwari, P. (2018), while observing the practices followed for life skills education in CBSE schools, also highlighted the problems related with teachers, students and parents. Lack of suitable methods, interest and a separate period for life skills, lot of burden on the teachers, and a few immeasurable life skills were some of the other factors that affected its implementation. Behrani (2016) also noticed similar problems in her study. The problems were found to be very critical that affected the implementation of life skills education significantly in school setting.

Life skills education can be well inculcated through formal setting yet schools fail to implement it properly due to several problems, such as training of teachers, negative attitude of students, etc. The schools need to focus on these aspects to promote life skills education.

Conclusion

The present review reveals useful information regarding the status of life skills education, practices and challenges being faced in its implementation in the Indian context. From the six identified themes, it can be observed that the interest of researches related to school, teachers and strategies have increased in the recent years. A large number of studies related to students are available across the globe, but only a few studies have been found to be related to the strategies. There is limited researches related to curriculum and the factors affecting implementation of life skills education. These identified gaps open up arena to conduct more research in the recognised field.

Overall, studies indicated that schools of other boards do not give much attention to life skills education. The CBSE schools are in better position. More studies are needed from the whole country for a comprehensive understanding of the status for it to

be made an integral part of the curriculum in the school setting in the Indian context. There is a need for life skills education programmes for teachers, parents, educators, policy makers and stakeholders to spread awareness. Life skills education would be more effective at the adolescent stage. Therefore, schools need to provide life skills education to adolescent students. Teachers should be trained to design instructional strategy and educational activities to develop an effective life skills training module and organise enriched programmes for teachers and students. The teachers as well as students should be encouraged to participate in training programmes with great enthusiasm. The school authorities too need to understand the importance of life skills education and accordingly need to make necessary policies, and plan and implement guidelines to overcome these challenges.

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Research on Education for Values in Schools
An Academic Review and Classification

Manish Kumar Srivastava*, Harish Chaudhry**,
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Abstract

This article reviews the research papers published in the educational journals on values education in schools from 1995 to 2020. The report aims to present a categorisation of literature with a comprehensive bibliometric analysis. Five hundred eighty-one relevant research papers are selected from the SCOPUS database and analysed using VOS viewer software. This research investigates how values education research has developed over this period in critical areas, significant authors, research types, and tools and methodologies applied. There is a dearth of published literature in this field. The co-citation analysis of cited references has revealed six research clusters related to values education researches in the school context. This study identified the significant authors, journals and organisations in this area. This study dispenses the first such review and consequently presents the most recent taxonomy and literature study helpful to researchers, educationists and policymakers.

Keywords: *Values, Values Education, School, Bibliometric Analysis, Co-citation Analysis.*

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सार

यह लेख 1995 से 2020 तक विद्यालयों में शिक्षा के मूल्यों पर शैक्षिक पत्रिकाओं में प्रकाशित शोधपत्रों की समीक्षा करता है। इस रिपोर्ट का उद्देश्य व्यापक ग्रंथ सूची विश्लेषण के साथ साहित्य का वर्गीकरण प्रस्तुत करना है। 581 प्रासंगिक शोधपत्रों को स्कोपस (SCOPUS) डेटाबेस से चुना गया है और VO Sviewer का उपयोग करके विश्लेषण किया गया है। यह समीक्षा उपरोक्त अवधि में मूल्य शिक्षा से संबंधित शोध के विकसित होने की प्रक्रिया का विश्लेषण करता है जिसमें मूल्य शिक्षा के महत्त्वपूर्ण क्षेत्रों, लेखकों, शोध प्रकारों, प्रयुक्त उपकरणों और पद्धतियां शामिल हैं। यह पाया गया है कि इस क्षेत्र में प्रकाशित साहित्य की बहुत कमी है। उद्धत संदर्भों के विश्लेषण द्वारा विद्यालय में मूल्य शिक्षा अनुसंधान से संबंधित कुल छः शोध समूहों की पहचान की गई। यह अध्ययन इस तरह की पहली समीक्षा है जो शोधकर्ताओं, शिक्षाविदों और नीति निर्माताओं के लिए महत्त्वपूर्ण होगा।

Introduction

Values education refers to the activities in the school or outside of school from which students learn or build up values and morality (Thornberg, 2013). It is the core of the educational course of action and curriculum; no educational system eliminates values from learning otherwise, the system's potential effects on student well-being and academic learning would deteriorate (Lovat and Clement, 2008). Values education is the blend of all the processes by which a person develops capabilities, attitudes and other forms of behaviour of positive values prevailing in the society in which they lives (Good and Kappa, 1973). Values education aims to develop the body, mind and spirit (Gandhi, 1956). Some other descriptions of values education are given in Table 1.

Table 1

Descriptions of Values Education from Literature

Authors	Description of Values Education
Simon and Howe, 1972	It is student oriented teaching method to help them understand their feelings.
Seshadri et al., 1992	Values education is not authoritarian indoctrination. It is a process of inducing learning. It is to enable students to think, reason, reflect, question, feel, care, experience, will and act.

Bhardwaj et al., 2015	Values education is a comprehensive process. In its full range of connotation, it covers the entire domain of learning, cognitive, affective and psychomotor. It includes knowledge, understanding and appreciation of our culture, moral, aesthetic and spiritual values, i.e., the values springing from our nationalistic aspirations and universal perceptions. Thus, values education is a process of education which involves working on the overall personality of the individual keeping in view all aspects of personality development— the intellectual, social and emotional, will and character.

It is concluded, based on the above descriptions, that value education is the procedure of inculcating values and developing the ability to make a proper choice in complicated decision-making situations about issues involving values.

Conventionally, parents and families are expected to deliver values education to children. However, in recent times schools have emerged to play a significant role in teaching values to children. It has become more necessary because families have become nuclear, and parents are not available to take an active part in providing values education. Schooling helps students take a due position in society, not only as well-informed people but also as logical and compassionate persons (Stengel and Tom, 2006). School personnel must provide values-based education. It cannot be done in an adhoc and disorganised manner but has to be a conscious and purposeful, well-planned enterprise with knowledge and consideration (NCERT, 2005).

It is extensively acknowledged that education is always with values (Carbone, 1991; Hatton, 1998; Halstead, 1996; Hooper et al., 2003; Lovat and Schofield, 2004b; Veugelers, 2000; Veugelers and Vedder, 2003. Aspin (2005) emphasises the omnipresence of values as they infuse all facets of education. Children and youth need to be trained to exercise the commonly held values of agreement and amity with self and others (UNESCO, 1998). Children are emissaries of the upcoming time. The child is educated by the complete environment in which it is nurtured, and that

environment is established uniformly by the parents, teachers and community (Strong-Wilson and Ellis, 2007). From the perspective of individual children, their homes are the first and primary learning environment and educator of values, but school obtains an increasing role with age. Moral education permeates the school curriculum, the rules of the schools, teachers, and principles (Tirri, 1998).

UNESCO had issued a set of guidelines for education of values in early childhood in 2000. The main aim of these guidelines was to build up a synchronised and universal structure to incorporate values education in early childhood by involving various target groups, including policymakers, leaders of the society, instructors, families, parents, and students (Pigozzi, 2006).

Many countries have their guidelines for values education in schools based on universal values and their local values system. In Australia, the values education framework helps students understand and be able to apply values such as, doing your best; fair go; care and compassion; honesty and trustworthiness; integrity; freedom; respect; tolerance and inclusion; responsibility and understanding (National Framework for Values Education in Australian Schools, 2005). Japanese people have deep faith in schools and education (Fujita and Bethel, 1994). Their educational guideline emphasises the development of spiritual aspects and character, i.e., Kokoro, as the fundamental purpose of school education. Kokoro is a multi-faceted concept, meaning heart, mind, or spirit (Okamoto, 1992). The fundamental ideological values like democracy, socialism and secularism are elaborated as the constitutional values in the Indian Constitution.

Given the importance of values education in schools worldwide, this review article aims to synthesise the research on education for values in schools and discuss the gaps that are needed to be researched and explored further. Firstly, our analysis classifies the research articles based on the year and database. This analysis is done for all relevant papers published on the topic from the year 1995 to 2019 in the SCOPUS database. We found that it consists of many research papers on values education in schools compared to any other database.

This research used some descriptive and evaluative methods to analyse the distinctiveness of published research papers quantitatively (McBurney and Novak, 2002). It intended to determine the research trends of the area of values education in

schools by applying quantitative methods to study and classify the selected publications according to different characteristics. Citation study looked at the connection between a research article and the cited references, based on the assumption that articles citing each other are by some means connected. Associations studied by citation analysis include fields, authors, organisations, and nations (McBurney and Novak, 2002).

Research Questions

This review paper aims to answer the following questions —

- How much space has 'values education in schools' literature occupied in the educational journals?
- How is the research papers classified based on methodologies applied?
- What are the major themes of researches under this topic?
- What are the most significant studies and their contributors in this field?
- What are the areas to be explored in future research?

Method

SCOPUS database was used to find out all the publications on values education in schools. It is the largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings. The number of papers in this database related to the topic was remarkably large compared to other sources. That's why, the SCOPUS database was selected for the study. Values education, moral education, and character education are used as synonyms in literature, so we searched all three words in our research. The 'values education' or 'moral education' or 'character education' and school keywords were explored in the titles, abstracts and author keywords of all the publications of the SCOPUS database. Overall, 650 research papers appeared in the subject areas of 'Social Science' or 'Arts and Humanities' or 'Psychology' in the English language as a search result excluding every other aspect. Article papers were included in this study. Each paper's relevance was checked thoroughly with the help of the title, keyword and abstract. Finally, 581 papers (open access— 64, others—517) with total citations 4023 were found suitable for this study. The duration of this review of the literature was 25 years, from 1995 to 2020.

In this review paper, 'Bibliometric analysis' and 'bibliometric visualisation methods' were used to analyse data with VOS viewer software. VOS viewer is a major tool designed as a software and used to envisage the bibliometric data (Eck and Waltman, 2010; Eck and Waltman, 2014a; Eck and Waltman, 2014b; Eck et al., 2017). Co-occurrences of author keywords, and inter-connectivity among the journals, inter-connectivity among the countries, inter-connectivity among the authors, inter-connectivity among research papers, and inter-connectivity among the publishing organisations were examined using this software. Co-citation analysis with cited references was also performed.

Bibliographic pairing or inter-connectivity is a similarity determinant that uses citation analysis to establish a connection relationship between the documents. Bibliographic pairing occurs when two studies reference a third common work in their bibliographies (total link strengths). It indicates that a probability exists that the two works treat an inter-connected subject matter (Martyn, 1964). The flowchart of the systematic literature review is given in Figure 1.

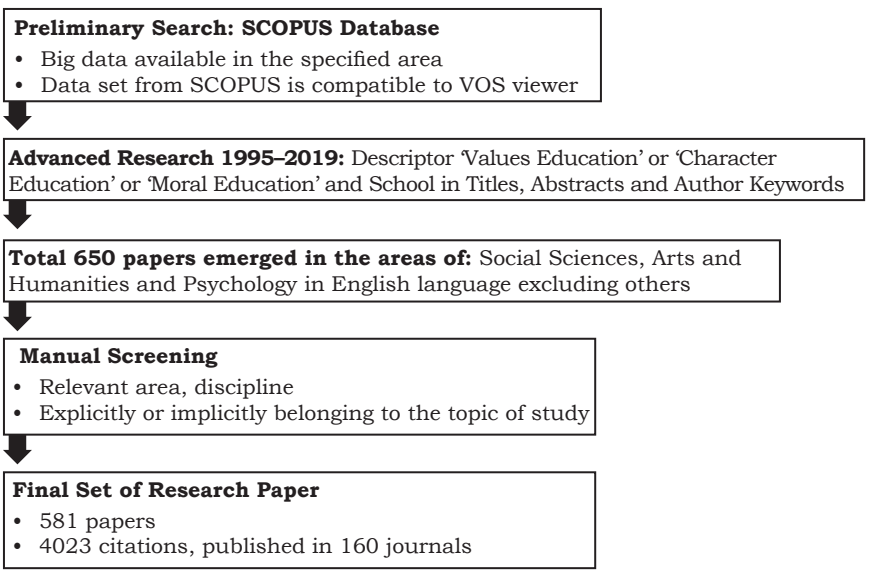

Figure 1: Systematic literature review flowchart

Results and Analysis

Space occupied by research papers on values education in schools

Figure 2 shows that only 581 of the total research articles (76568) in the school education field (1995–2019) were found on values, character and/moral education in schools. It came out approximately 0.75 per cent of the total research papers on school education. It indicates that there is a dearth of published literature in reputed journals in this area.

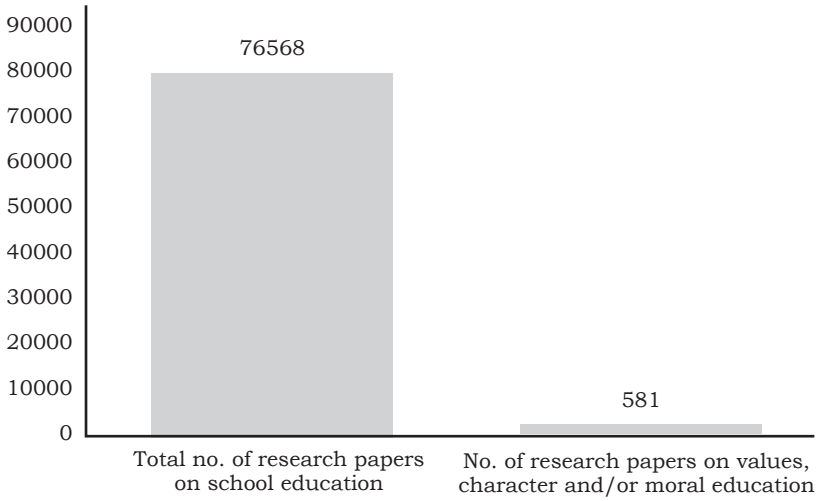

Figure 2: Space occupied by research papers on values education in schools

Categorisation of research papers by the year of publication

Table 2 represents the publication records and percentage of publications from 1995 to 2019. It shows that the greatest of articles (56) on 'values education in schools' was published in the year 2019, and the least number of papers (6) in 1997. The second highest number of documents was in 2017 (47), and the third highest in 2016 (41). It clearly shows that there is less published literature or quality research available in this particular area. The researchers and research organisations have shown little interest in this field.

Table 2

Publication Records and Percentages by Publication Years

Publication Years	Publication Records	% of 581
2019	56	9.64
2018	39	6.71
2017	47	8.09
2016	41	7.06
2015	36	6.20
2014	31	5.34
2013	30	5.16
2012	30	5.16
2011	36	6.20
2010	40	6.88
2009	26	4.48
2008	21	3.61
2007	10	1.72
2006	10	1.72
2005	16	2.75
2004	15	2.58
2003	8	1.38
2002	7	1.20
2001	9	1.55
2000	8	1.38
1999	24	4.13
1998	14	2.41
1997	6	1.03
1996	10	1.72
1995	11	1.89
Total	**581**	——

Categorisation based on the Type of Research

Figure 3 shows the allocation of articles by the type of research applied. Once the articles on 'values education in school' have been identified, each one was coded on the basis of the type of research applied. Research can be divided into various types— quantitative vs. qualitative, empirical vs. conceptual, applied vs. fundamental

and cross-sectional vs. longitudinal. In this review of the literature, the research papers were categorised into empirical research and conceptual research. Empirical research is data-driven research capable of verification by either experiment or observation (Kothari, 2004). The conceptual research depends upon existing literature and theory. It is in the form of classification of existing literature to suggest some propositions. It was found that out of a total of 581 articles, the empirical research papers were 424 (73 %) and conceptual research was 157 (27 %). Most of the empirical papers mentioned surveys to collect data, while some used observational data to check their hypotheses empirically. The conceptual papers acknowledged a variety of propositions supported by existing research papers and existing literature. The categorisation result shows that educational researchers employ empirical methods widely in their studies (Sota et al., 2019).

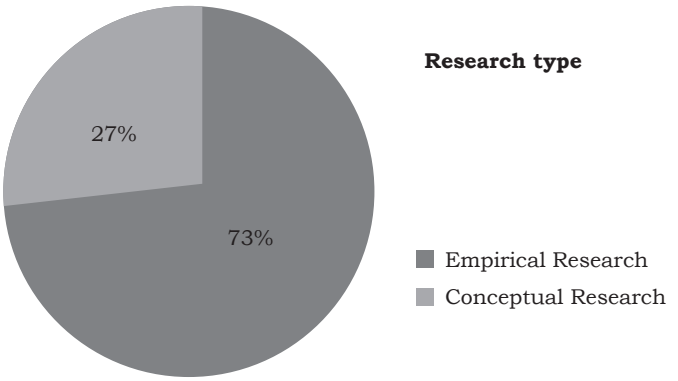

Figure 3: Research type based categorisation

Classification by Tools or Methods used in these Researches

All the research papers were classified based on tools or methods used for analysing the data (Figure 4). The most extensively used method in these studies was the interview and/or semi-structured interviews (128 papers). Researchers in this field predominantly used this method. Other significant methods were— survey (89), focus group (62), a meta-analysis (57), case study (57), content analysis (53), observation (34), experiment (34), ethnography (20), longitudinal (20), regression (6), multivariate statistical (5), descriptive statistical (11), and similarity structural analysis (5).

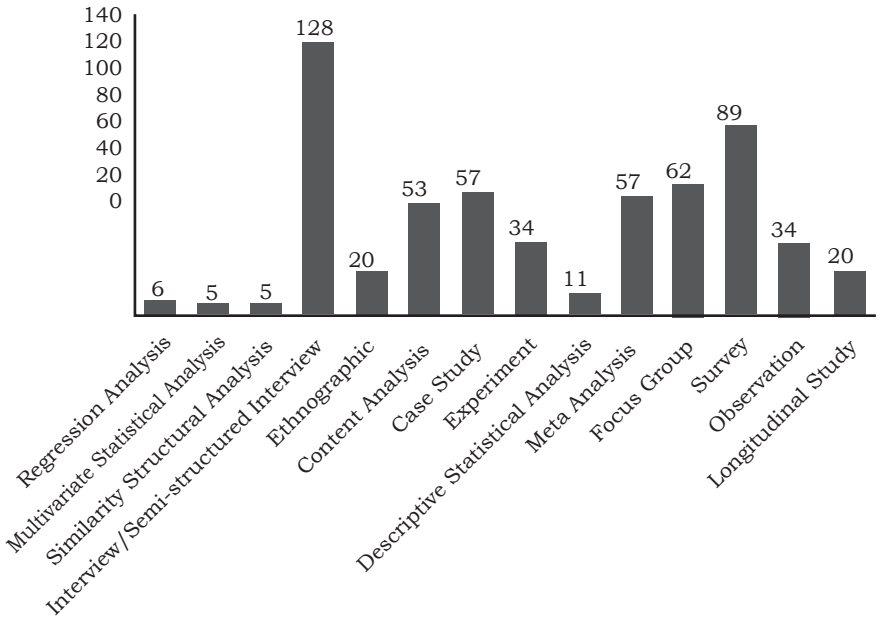

Figure 4: Distribution of articles by tool or methodology used for analysis

Co-occurrence of Author Keywords

Figure 5 represents the co-occurrence of author keywords (density visualisation). From the total 1117 keywords, 30 met the threshold, while the minimum number of occurrence of the keyword was kept at 5 to get a sufficient number of keywords. For each of 30 keywords, the total strengths of co-occurrence links with other keywords was obtained with the help of VOS viewer. 'Moral education', 'character education' and 'values education' were found to be the strongest keyword with 96, 72, 41 occurrences and 62, 47, 32 total link strength, respectively. For some of the remaining part of the list, the first numeral show the occurrence and second ones show the total link strength in the brackets: character (24; 31), values (27; 30), education (25; 30), ethics (12; 17), citizenship education (14; 16), curriculum (11; 15), school (6; 14), citizenship (8, 10), value (7; 10), religion (7; 7), democracy (5; 5), and globalisation (5; 5). In these publications, 'moral education', 'character education' and 'values education' are the main concept, and other main keywords are studied in association with them. Figure 6 represents the total

link strengths and the number of occurrence of author keywords. Total link strengths show the association between the keywords.

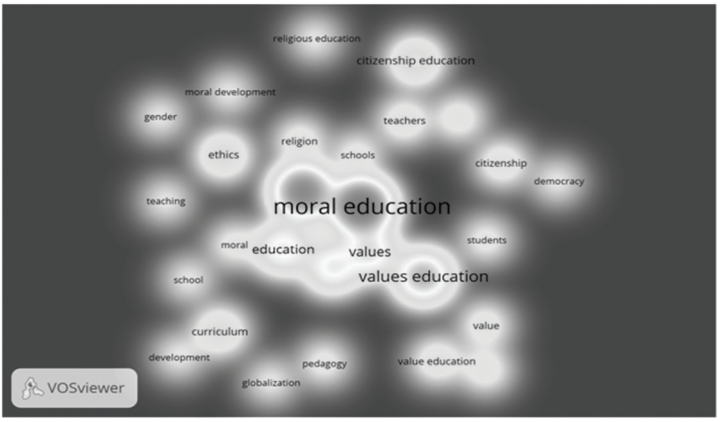

Figure 5: Co-occurrences of author keywords (density visualisation)

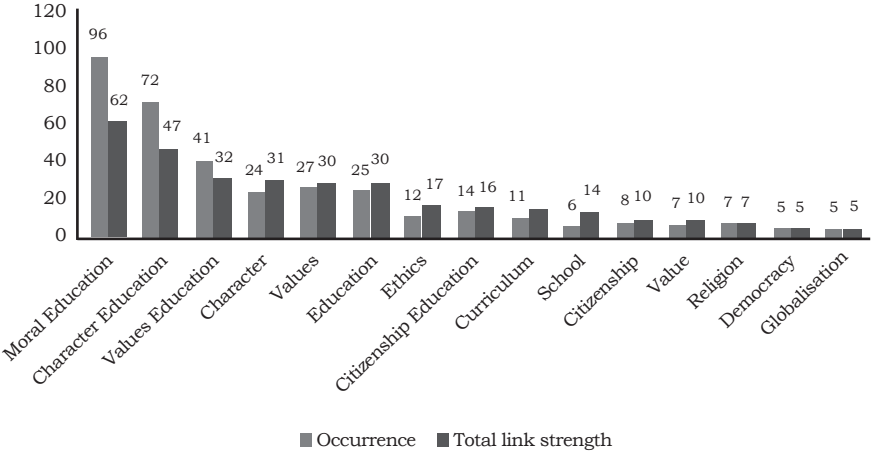

Figure 6: Total link strength and occurrence of author keywords

Bibliographic Pairing of the Journals

The Figure 7 represents the bibliographic pairing of journals with network visualisation. From the 207 journals, 27 met the threshold, while the minimum number of publications of a journal was kept 5 to get a sufficient number of journals. For each of the 27 journals,

the total strengths of bibliographic pairing links with other journals were calculated. The journals with the highest total link were selected. *Journal of Moral Education* had the maximum number of publications— 126, with 1368 citations and 1027 total link strengths. The second was the *Journal of Belief and Values,* with 18 publications, 101 citations, and 458 total link strengths. For each journal, the first numeral shows the number of publications, the second one shows the number of citations, and the third one shows the total link strengths. The other significant journals in this list were as follows: *Journal of Research on Christian Education* (7, 30, 304); *International Journal of Educational Research* (5, 52, 256); *Oxford Review of Education* (8, 46, 186); *Teaching and Teacher Education* (7, 146, 303); *Educational Review* (6, 66, 268); *British Journal of Educational Studies* (8, 139, 174); Action in Teacher Education (8, 52, 242); *Educational Philosophy and Theory* (12, 102, 185); *British Journal of Religious Education* (11,99,161); *Theory and Research in Education* (8, 82, 152).

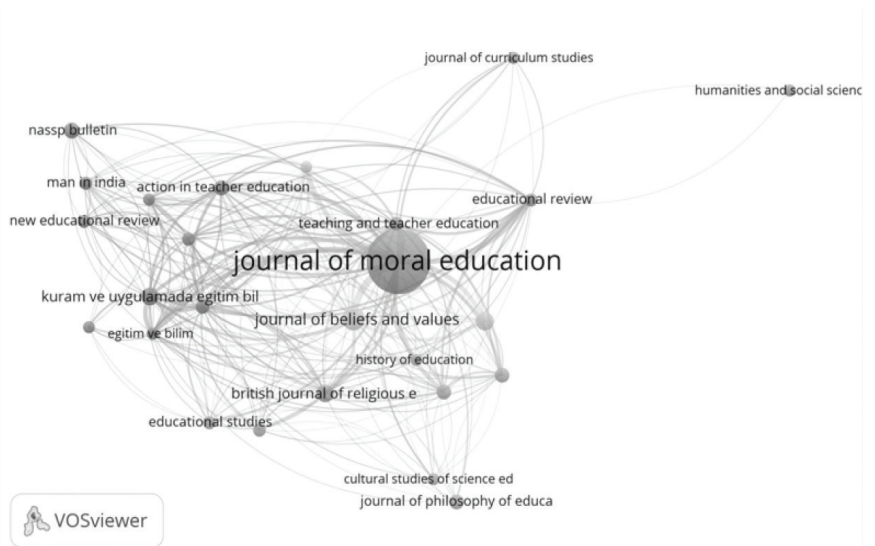

Figure 7: Bibliographic pairing of the sources (network visualisation)

Bibliographic Pairing of the Countries

Figure 8 represents the bibliographic pairing of countries with overlay visualisation. Out of 75 countries, 22 meet the threshold while the minimum number of publications of a country remained at 5 to get a sufficient number of countries. For each of the 22 countries, the total strength of the bibliographic pairing links with other countries was obtained. The countries with the greatest total link strengths were selected. Number one was the United States with 147 publications, 1208 citations and 3624 total link strengths. For the other significant countries, the first, second and third numeral show the number of publications, the number of citations and the total link strength, respectively. The United Kingdom was the second (110, 918, 2476), and Australia was the third (42, 366, 1171). The other countries were— Canada (17, 169, 696), Sweden (12, 170, 367), Turkey (33, 42, 863), Israel (14, 54, 422), South Africa (14, 56, 526), China (23, 223, 556), Indonesia (36, 63, 774), Netherlands (17, 111, 520), Singapore (9, 82, 267), Malaysia (11, 62, 384), Hong Kong (10, 115, 325) and Finland (9, 63, 317).

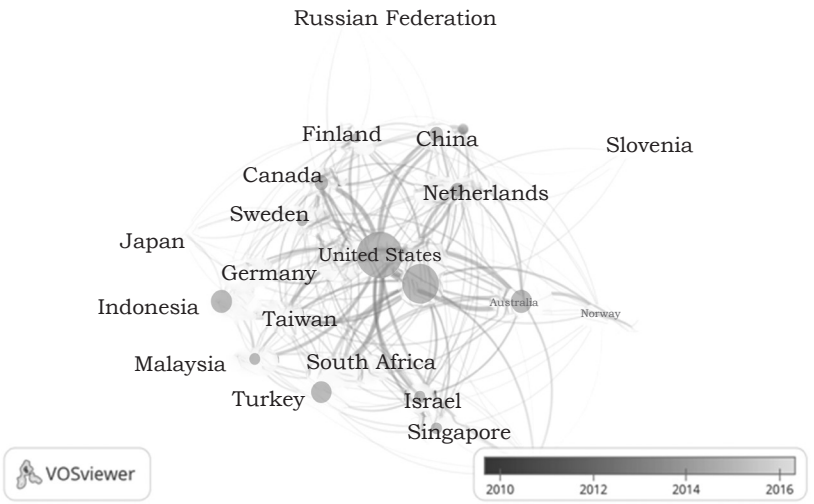

Figure 8: Bibliographic pairing of the countries (overlay visualisation)

Bibliographic Pairing of the Authors

Figure 9 represents the bibliographic pairing of the authors with overlay visualisation of the 972 authors, 21 met the threshold while the minimum number of publications of an author is kept at three. For each of the 21 authors, the total strength of the bibliographic pairing links with other authors was calculated. Fifteen authors with the greatest total link strength were selected to analyse. The first author was D.I. Walker, with 4 publications, 49 citations, and 461 total link strengths. For the other authors, the first, second and third numeral show the number of publications, the number of citations and the total link strength. K. Kristjansson, was the second (5, 82, 403), and Lovat, T. was the third one (5, 63, 380). The other authors were; Clement, N. (3, 55, 364) Sanderse, W. (3, 11, 255), Lovat, T.J. (3, 40, 229), Arthur, J. (6, 104, 212), Goodman, J.F. (3, 11, 156), Carr, D. (3, 38, 92), Pike, M.A. (2, 23, 111), Thornberg, R. (4, 114, 79), Berkowitz, M.W. (4, 50, 72), Lickona, T. (4, 107, 54).

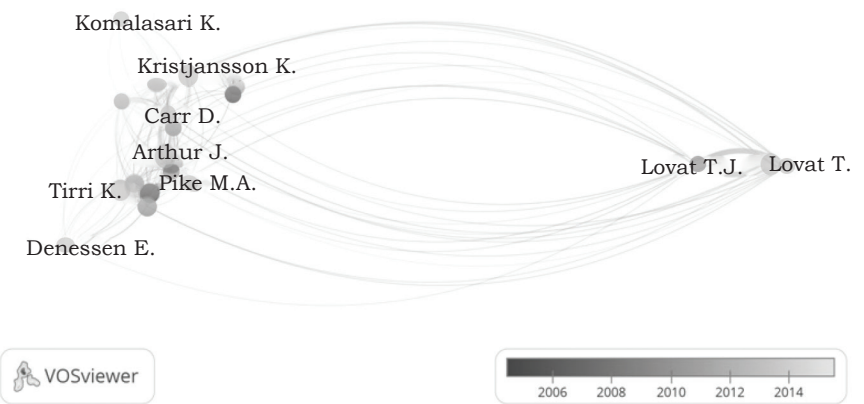

Figure 9: Bibliographic pairing of the authors (overlay visualisation)

The following table shows the most significant authors based on their total link strengths and their articles.

Table 3

Significant Authors and their Publications

Authors	Publications
Walker, D.I.	Walker, D.I. et al. (2017), Sanderse, W. et al. (2015), Walker, D.I. et al. (2015)
Kristjansson, K.	Kristjansson, K. (2014), Kristjansson, K. (2013), Walker, D.I. et al. (2017), Kristjansson, K. (2000), Walker, D.I. et al. (2015)
Lovat, T.	Lovat (2017); Semetsky and Lovat (2011); Lovat et al. (2011); Lovat et al. (2010); Lovat (2010); Lovat and Clement (2008); Lovat and Schofield (2004)
Thornberg, R.	Thornberg (2008); Thornberg (2008); Thornberg (2008); Thornberg (2007); Thornberg (2006); Thornberg (2006)
Arthur, J.	Revell, L., and Arthur, J. (2007); Arthur, (2005); Arthur and Carr (2013); Arthur, (2011)
Sanderse, W.	Sanderse, W. (2019), Sanderse, W. et al. (2015), Sanderse, W. (2016)
Clement, N.	Lovat et al. (2011); Lovat et al. (2010); Lovat and Clement (2008)
Goodman, J.F.	Dishon and Goodman (2017), Goodman, J.F. (2019), Goodman, J.F. (1998)
Carr, D.	Arthur and Carr (2013), Carr and Landon (1999), Carr and Landon (1999)
Arweck, E.	Arweck and Nesbitt (2004a); Arweck and Nesbitt (2004b)
Pike, M.A.	Pike, M.A. (2011), Pike, M.A. (2019)
Helwig, C.C.	Helwig et al. (2008); Prencipe and Helwig (2002)
Prencipe, A.	Helwig, et al. (2008); Prencipe and Helwig (2002)
Semetsky, I.	Semetsky (2010); Semetsky and Lovat (2011)

Bibliographic Pairing of the Research Articles

Figure 10 represents the bibliographic pairing of the publications (documents) with overlay visualisation. The least number of citations for each article was kept 15 to get a sufficient number of articles. Of the 581 articles, 82 met the threshold. For each of the 82 articles, the total strength of the bibliographic pairing links with other publications was calculated. Out of 82 publications, only 61 were found connected. The documents with the greatest

total link strength were selected. The article with the highest link strength was Lovat, T.J. (2008), with 16 citations and 93 total link strengths. Although Thornberg, R. (2008) was a highly cited article in this field with 73 citations, it has been the sixth strongest article with 30 total link strengths. The second one was Lovat, T. (2008), with 28 citations and 81 total link strengths. For each publication, the first numeral shows the number of citations, and the second one shows total link strengths. The other publications were listed consecutively— Lovat, T.J., 2010 (22, 73), Walker, D.I., 2015 (22, 51), Lovat, T. 2010 (20, 42), Kristjansson, K., 2013 (31, 24), Berkowitz, 2011, (31, 14), Jones, T.M., 2009, (33, 19), Holm, K., 2009, (21, 16), Lewis et al., 2009, (17, 5), Thornberg, R., 2008a (31, 19), Milson, A.J., 2002 (20, 18), Valk, J. 2007 (15, 18), Lin, A., 2015 (16, 18), Miller, S.C., 1997 (44, 14), Lickona, T., 1996 (84, 7).

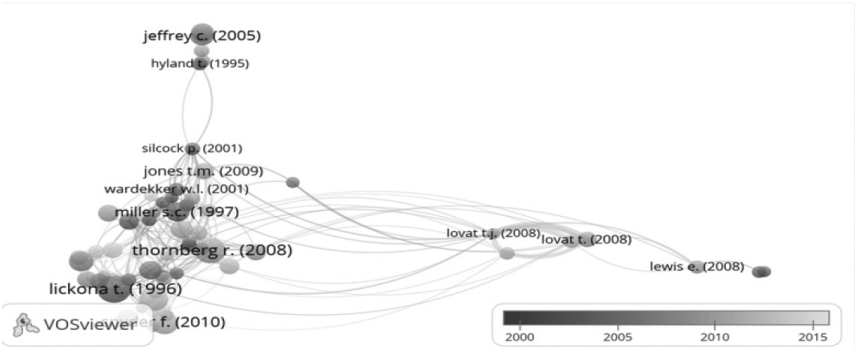

Figure 10: Bibliographic pairing of the research articles (overlay visualisation)

The strongest publication (on the basis of total link strengths) in this area is authored by Lovat and Clement (2008), titled, 'Quality Teaching and Values Education: Coalescing for Effective Learning'. It is an empirical study. In this paper, the authors try to determine the connection between knowledge of quality teaching and student accomplishment. This research extends the comprehension of the conception of 'teacher' beyond information-based learning to that of bringing on in-depth understanding at a rational level, which requires the application of communication and self-reflective abilities. Quality teaching prepares teachers for

explicit instruction in values education. It is clearly concluded that values education is the emotional and relational aspect of teaching that gradually produces a positive effect. The authors have used the data from the Australian Government's Good Practice Schools project.

The second strongest article (based on total link strengths) in this field was authored by Lovat, et al. (2010), titled, 'Values Education as Holistic Development for all Sectors: Researching for Effective Pedagogy'. This paper analyses the findings from publically funded projects in Australia. The authors studied the relationship of values education with school effectiveness and school ambiance. They concluded that high-quality values education contributes to holistic learning, including the academic progress of students.

The most cited research paper in this field was authored by Thornberg, R. (2008), titled, 'The Lack of Professional Knowledge in Values Education' (73 citations). It is a qualitative research. This paper aimed to investigate teachers' perceptions of their practice of values education and explore their degree of professionalism in this matter. Qualitative interviews with 13 teachers have been done and analysed by a relative analysis. In their view, values education is—(i) mostly immediate and ad hoc, (ii) entrenched in everyday school life with a focus on the typical behaviour of students in School, and (iii) partially or fully unconsciously performed. Also, professional knowledge appears to be absent in the field of values education among these teachers. Developing democratic skills by students from values education depends upon the students' abilities to participate in rule-making. It requires confident teachers with professional competence in values education, including a well-developed moral language and knowledge in moral, psychological, social-psychological, and values educational theories and research (Thornberg, R., 2008).

Bibliographic Pairing of the Organisations

The Figure 11 shows the bibliographic pairing of organisations with overlay visualisation. The minimum number of publications for an organisation was 2. The minimum number of citations of an organisation was 15. Out of the 820 organisations, 30 met the thresholds. For each of 30, the total strength of bibliographic links with other organisations was calculated; of the 30 organisations, 26 were found as the most extensive set of interconnected, as

shown in Figure 11. The influential organisations according to total link strengths, are listed as follows (the first number indicates the number of publications, the second one shows the number of citations, and the third one shows the total link strengths): University of Humanistic Studies, Netherlands (2, 1, 210), University of Amsterdam, Netherlands (2, 7, 199), The University of Kurdistan, Iran (2, 3, 96), The University of Helsinki, Finland (2, 3, 96), Sebelas Maret University, Indonesia (2, 2, 31), University of Nottingham, United Kingdom (2, 4, 23), University of Oxford, United Kingdom (4, 21, 29), University of Birmingham, United Kingdom (2, 23, 23), Stanford University, United States (3, 25, 8), Canterbury Christ Church University, United Kingdom (3, 81, 16), University of Hong Kong, China (2, 15, 6), University of Sydney, Australia (2, 55, 1), University of Missouri, United States (2, 36, 14), and Bar-Ilan University, Israel (2, 2, 17).

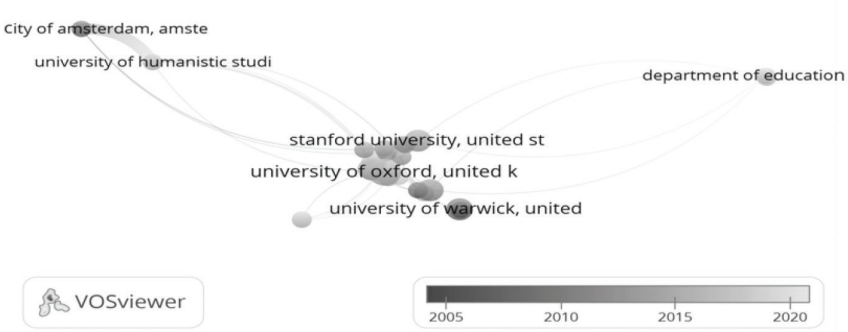

Figure 11: Bibliographic pairing of organisations (overlay visualisation)

The Figure 12 shows the organisations and their publications (more than 5). In this category, the University of Birmingham had the maximum number (17) of publications, followed by the University of Newcastle with 10 publications. The other significant contributors are the National Institute of Education, Helsingin Yliopisto, Bar-Ilan University, UCL Institute of Education, University of Oxford, University of Edinburgh, Nanyang Technological University, Queensland University of Technology, Stanford University and Canterbury Christ Church University.

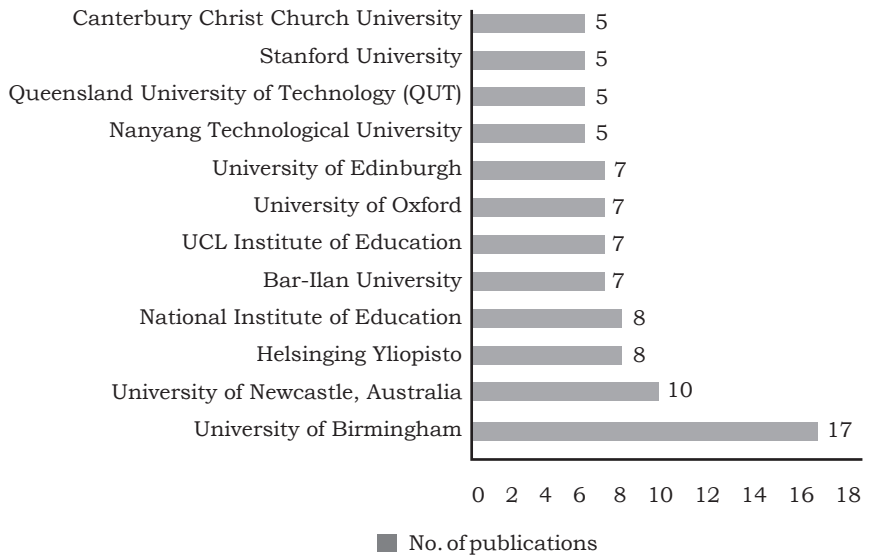

Figure 12: Organisations and their publication without total link strengths

Co-citation Analysis of Cited Reference

The Figure 13 shows a co-citation image diagram of cited references with network visualisation. The minimum number of citations for each publication remained 4 to get a sufficient number of references. Of the 21671cited references, 33 met the threshold. For each of the 33 cited references, the total strength of the bibliographic pairing links with other references is calculated. Out of 33 cited references, only 26 were found connected. Co-citation analysis was a special kind of citation analysis used to identify clusters of references co-cited by subsequent articles (Small, 1973). A well-defined connection has been determined among references that have been published in the past with the help of bibliographical co-citation analysis. This analysis produced a visual map using VOS viewer software that shows the strength of the relationship between two co-cited articles. This relationship explains how the related research papers may be summarised in many related clusters obtained by co-citation analysis.

In the above figure, each node is a research paper and the size of the node indicates the frequency with which the paper has been co-cited with another paper in the map, reflecting its popularity.

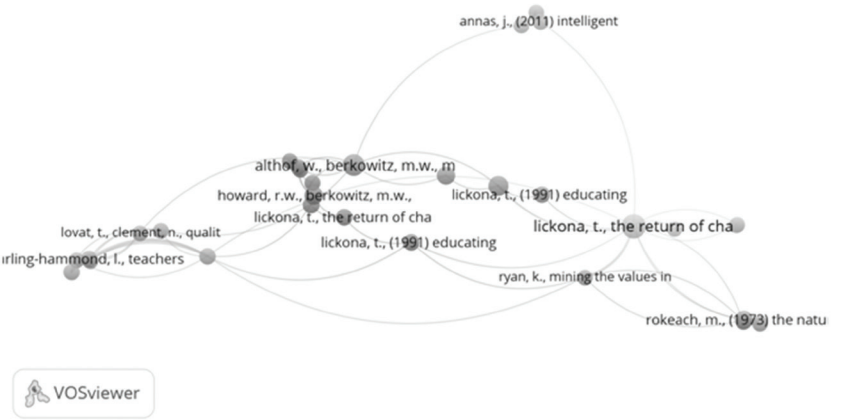

Figure 13: Co-citation image diagram of cited references

The distance between the nodes shows the relationship power between two co-cited articles. This indicates the development of research clusters based on strongly related nodes, where each node is assigned to only one cluster (Van Eck and Waltman, 2010). We carefully examined and analysed articles in each cluster and find out the common theme for each research cluster, which is as follows (Figure 13): Cluster 1 (red)—Community education; Cluster 2 (green)—Pedagogical imperatives; Cluster 3 (blue)—School as a guiding force; Cluster 4 (yellow)—Religious education; Cluster 5 (violet)—Humanistic and academic approach; Cluster 6 (aqua)—Whole school approach. The co-citation analysis determined the following six clusters (Table 4) in which highly cited references with total link strength are also mentioned.

Table 4

Most Cited References in Each Cluster

Cluster 1 (Community education)			Cluster 2 (Pedagogical imperatives)		
Citations	Link strength	References	Citations	Link strength	References
48	16	Arthur, J. (2005)	4	7	Benninga, J.S. et al. (2006)
4	6	Davies, I. et al. (2005)	5	13	Darling-Hammond, L. (1996)
6	4	Howard, R.W. et al. (2004)	5	14	Leming, J.S. (1993)

11	4	Lickona, T. (2009)	4	5	Lovat and Clement (2008)
8	5	Lickona, T. (1993)	4	13	Darling-Hammond, L. (1996)
4	2	Osler, A. (2011)	4	5	Veugelers, W. (2000)
4	3	Suissa, J. (2015)	5	7	Wentzel, K.R. (1997)
4	5	Westheimer and Kahne (2004)			
Cluster 3 (School as a guiding force)			Cluster 4 (Religious education)		
11	4	Lickona, T. (2009)	8	5	Lickona, T. (1993)
5	3	Lickona, T. (1996)	4	2	Noddings, N. (1984)
10	8	Althof and Berkowitz, (2006)	4	2	Noddings, N. (2015)
			4	1	Nucci, I.P. (2001)
Cluster 5 (Humanistic and acad emic approach)			Cluster 6 (Whole school approach)		
4	7	Halil, E. (2003)	4	4	Annas, J. (2011)
6	7	Rokeach, M. (1973)	4	4	Park and Peterson, (2006)
4	8	Ryan, K. (1993)	4	2	Peterson and Seligman (2004)

Conclusion

In this study, the research papers on, 'values education in schools' were analysed using a bibliographic analysis approach using the SCOPUS database. VOS viewer software was applied to analyse and visualise the different characteristics of the selected papers.

Primarily, it is observed that this topic or area is less focused by the contemporary educational researchers as there are only 681 papers (0.75 per cent of total research papers published on school education) are found relevant in the last twenty-five years (1995–2019) in the subject areas of Social Sciences, Arts and Humanities and Psychology. Though the importance of values education in schools has increased especially in the current social scenario; United Nations Organisation keeps on

emphasising on the need of values education in its reports and documents (UNESCO, 1998; UN sustainable goals, 2015), it is yet less researched area in the educational field with special reference to schools. It indicates that— (i) it may be a complex and difficult topic and (ii) the progress of the society is perhaps being equated with material development and consumption and not a good attitude towards values orientation. There are only a few authors and research groups across the globe who are researching in this area. 'Values education in schools' is still an area in progress, and there are many facets to this concept (i.e. values education delivery and curriculum, teachers' training and motivation, parents support and engagement, pedagogical approach, etc.) that should be studied by other researchers. It is also interesting to conclude that a significant amount of studies have been published in the last 10 years (around 65 per cent).

From the analysis, we can see that the word 'values education' has emerged in the 1990s in the publication world. And henceforth, it has been increased especially in the school context. Later on, the scholars, educators and organisation like United Nations has broadened the use and application of this topic with more emphasis on peace education, inclusive education, democracy, equality and civic consciousness (Lee and Taylor, 2013).

The co-occurrences of author's keywords analysis show that the researchers studied those concepts more recurrently in association with the major conceptual words, i.e., character education, moral education and values education. Other keywords— values, student, character education, education, teachers, curriculum, democracy, character, ethics, spirituality, teacher education, value, value education, citizenship and religion have been associated strongly with the main key concepts. The keyword 'moral education' has high connectivity with other keywords, and it means it is used by most of the authors.

The analysis of bibliographic pairing of journals shows that the most well-liked Journal in this field is the *Journal of Moral Education*. It is found that most of the researches in this area are published in the Journal. The *Journal of Moral Education* has published more than 22 per cent of research papers of the total number of published papers in this subject area.

The result of the bibliographic pairing of countries indicates that the most significant country of origin in the area of values, character and moral education in schools is the United States. The United Kingdom is the second, and Australia is the third. It can be concluded that most of these researches are being carried out in developed countries. In the studies held in Australia, the word 'values education' has been used more frequently as compared to the character or moral education. All of the above mentioned three countries collectively contribute more than 50 per cent of publications in this subject area.

The bibliographic pairing of the organisation indicates that the major universities in this area are the University of Humanistic Studies and the University of Amsterdam, both from the Netherlands that encourage this publication, and they have strong connections with other organisations. It is also interesting to observe that the University of Birmingham, United Kingdom and the University of New Castle, Australia, are at the top of the list when it is the number of research publications though their linkages are found low. It means they are working independently in the area of values education in schools.

In the co-citation analysis of cited references, six research clusters have been identified. The cluster 1 (Community Education) emphasises upon improvised citizen behaviour by citizenship education. It promotes community-based part-time educational activities and also argues for rational freedom and control in educational policy. The cluster 2 (Pedagogical Imperatives) promotes values development among children with curriculum-based support. Some of the references indicate socio-economic influence on character education. The cluster 3 (School as a guiding force) emphasises student-centred values education in schools. Values education should be delivered by teachers in a structured way. Cluster 4 (Religious Education) believes in the fusion of religious education with character education. The articles under this cluster emphasise that teaching values through religion has been found effective. They also promote parents' education to engage them actively in values education programmes of schools. Cluster 5 (Humanistic and Academic) says that there exists a positive relationship between academic performance and values education. Textbooks could be an effective guide to teach values. Cluster 6

(Whole School Approach) promotes to teach universal values like honesty and liberty to the students. The whole school approach includes creating policies and vision of schools related to each and every activity in the school with special emphasis on tolerance education.

Direction for Future Research

One of the aims of the study is to provide research direction in the future in the area of values education in School. Analysing the previous researches, the following topics and related areas are suggested for future studies.

- Experimental researches and longitudinal studies may be undertaken on the effect of values education programme in the schools on students and ultimately to society.
- Studies on parents' willingness to pay extra fees to the schools which offer a special values education programme. Can values education programmes become a marketing and/or branding technique for schools.
- Is there any method to find out how much does a school gains in terms of the number of admissions from the values education programme and from other curricular and extracurricular activities to undertake cost-benefit analysis?
- Studies based on the impact of teacher training programmes for values education in schools on teachers' behaviour and their performance.

Limitation and Future Scope

The research papers that have been included in the review paper have been searched and identified from a well-known database, i.e., SCOPUS, but there could be some relevant work in the specific area that could have been missed by authors. VOS viewer software mostly uses the database of SCOPUS and Web of Science. In this article, documents only from the database of SCOPUS are utilised. Few papers which are not in the SCOPUS database are excluded in this study. In the manual process of elimination of irrelevant papers, personal bias and subjectivity may have come into the picture. The authors have not considered other similar words like ethics, education or citizenship education as the keywords. Those words are left by authors for further exploration. However, since a few authors and research groups are working in this specific area,

'Values education in schools' is still an area in progress, and there are many dimensions of this field, i.e., values education delivery and curriculum, teachers' training, and motivation, parents training, support, and engagement that may be studied by other researchers in the future.

Data Availability Statement

The data used in the current study is available in the following link: https://drive.google.com/file/d/1ARC-jMhcmiRFb1KP3h-p6NBbWOmjkLJ5r/view?usp=sharing

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Academic Procrastination in Relation to Achievement Values, Self-esteem, Intelligence and Course Stream

A Multivariate Study

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Abstract

A sample of 451 students, belonging to Arts and Science faculties, from the junior colleges of Maharashtra, were administered to check Academic Procrastination Scale (with four dimensions or 'subscales'), Achievement Values and Anxiety Inventory, Rosenberg's Self-esteem Scale, and Cattell's Culture Fair Intelligence Test. The data were analysed by hierarchical MANOVA, multiple regressions and correlations, multivariate multiple regression and canonical correlation analysis. Academic procrastination was negatively related with achievement values, self-esteem and intelligence. Science students procrastinated less than the arts

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students and this faculty-wise difference was partially accounted by achievement values, self-esteem, and intelligence. Neither gender differences were obtained in academic procrastination nor gender moderated the effect of faculty. The study provided empirical distinction between procrastination in curricular and co-curricular activities. The relationship between academic procrastination and achievement values, self-esteem and intelligence was attributed to procrastination in curricular activities and not procrastination in co-curricular activities. The implications of these findings are briefly indicated in the paper.

Keywords: *Academic Procrastination, Achievement Values, Self-esteem, Intelligence, Course Stream, Junior Colleges.*

सार

महाराष्ट्र के कनिष्ठ महाविद्यालयों से कला और विज्ञान संकायों से संबंधित 451 छात्रों के एक नमूने का अध्ययन अकादमिक शिथिलता पैमाना; चार आयामों या 'उप-स्तर' के साथद्ध, उपलब्धि मूल्य और चिंता सूची, रोसेनबर्ग का आत्म-सम्मान पैमाना, और कैटेल का कल्चर पफेयर इंटेलिजेंस टेस्ट पर किया गया था। आंकड़ों का विश्लेषण पदानुक्रमित MANOVA एकाधिक प्रतिगमन और सहसंबंध, बहुभिन्नरूपी एकाधिक प्रतिगमन, और विहित सहसंबंध विश्लेषण द्वारा किया गया था। विश्लेषण के अनुसार अकादमिक शिथिलता, उपलब्धि मूल्यों, आत्म-सम्मान और बुद्धि से नकारात्मक रूप से संबंधित थी। विज्ञान के छात्रों मंे कला के छात्रों की तुलना में कम शिथिलता पाई गई, और यह संकाय-वार अंतर आंशिक रूप से उपलब्धि मूल्यों, आत्म-सम्मान और बुद्धि के कारण प्रतीत होता है। अकादमिक शिथिलता में लिंग भेद नहीं दिखाई पड़ा। इस अध्ययन में पाठ्यचर्या और सह-पाठ्यक्रम गतिविधियों मंे शिथिलता का प्रभाव दिखाई पड़ता है। अकादमिक शिथिलता और उपलब्ध मूल्यों, आत्म-सम्मान और बुद्धिमत्ता के मध्य संबंध का कारण पाठ्यचर्या संबंधी गतिविधियों में शिथिलता को पाया गया। इन विशेषताओं तथा पाठ्य सहगामी गतिविधियों में शिथिलता के बीच सहसंबध नहीं परिलक्षित होता है। इन परिणामों के निहितार्थ इस शोधपत्र में इंगित किए गए हैं।

Introduction

Philosophers, political thinkers, military personnel, poets, saints and writers on religion and spirituality, both from eastern and western traditions, have expressed their concern for procrastination. According to Steel (2007), the earliest records, related to procrastination, stretch back to at least 3000 years. However, procrastination as a variable in empirical research, has quite a short history. The procrastination research started

gathering momentum in the fourth quarter of the twentieth century. Procrastination pervades practically all domains of life. According to Steel and Klingsieck (2016), researchers studied procrastination in various life domains such as, education (academic procrastination), work and financial, health and subjective well-being. Among these, academic procrastination is comparatively a more widely studied domain. The various meta-analytic and review papers (Kim and Seo, 2015; Rozental et al., 2018; Steel, 2007; Van Eerde, 2003; Van Eerde and Klingsieck, 2018; Zacks and Hen, 2018) present excellent state of the art panorama about the nature, causes, correlates and consequences of academic procrastination and the academic and psychological interventions.

Research has linked procrastination with several cognitive, motivational, personality and demographic variables including self-regulation, self-efficacy, effort regulation, fear of failure, anxiety, depression, self-esteem, perfectionism, pessimism, academic and achievement motivation, time perspective, intellectual ability, scholastic aptitude, gender, etc. Due to space limitation, only the selective review, relevant to the present research, is offered here.

Several studies have explored the role of motivation in academic procrastination using the self-determination theory and the distinction between intrinsic and extrinsic motivation (Deci and Ryan, 1985; Ryan and Deci, 2008). Senecal et al. (1995) examined the relationship between academic procrastination and academic motivation, the latter having several subscales. The intrinsic motivation subscale correlated negatively, whereas the external regulation and a motivation subscales correlated positively with the academic procrastination. Senecal, et al. (1995) concluded that 'procrastination is a motivational problem that involves more than poor time management skills or trait laziness' (p. 607). In a similar study, Cavusoglu and Karatas (2015) replicated the negative relationship between intrinsic motivation and academic procrastination. A motivation was positively correlated, whereas extrinsic motivation was uncorrelated with academic procrastination. Rakes and Dunn (2010) reported that academic procrastination was negatively correlated with intrinsic motivation and effort regulation. Brownlow and Reasinger (2000) found that low academic procrastinators had more intrinsic as well as extrinsic motivation than the high procrastinators. Brownlow and Reasinger's finding can very well be explained in terms of the classic 'need-press' conceptualisation (Murray, 1938) and

Atkinson's (1964) theory of achievement motivation, according to which performance is a function of achievement-related motivation plus extrinsic motivation.

The very idea that persons with high need for achievement have a strong urge for excellence and they persistently put in vigorous efforts to achieve their goals suggests that high achievement motivation would be negatively associated with academic procrastination. In the recent past, Van Eerde (2003) and Steel (2007) have tried to describe procrastination in the personality space defined by the Big Five Model (Goldberg, 1990) and Five-Factor Model (Costa and McCrae, 1992; McCrae and Allik, 2002) of personality. Incidentally, the Five-Factor Model is well-validated in India by Lodhi and coworkers (Lodhi et al., 2002, 2004). According to Van Eerde (2003) and Steel (2007), procrastination is linked with Conscientiousness and Neuroticism factors. The two facets of Conscientiousness— 'Achievement striving' and 'Self-discipline' are quite important in this regard. Based on his meta-analysis, Steel (2007) concluded that the two constructs—Need for achievement and intrinsic motivation correlated negatively, –0.44 and –0.26 respectively, with procrastination.

As Steel (2007) pointed out, poor self-esteem is related with neuroticism and hence it is expected to be related with academic procrastination. Solomon and Rothblum (1984) reported negative correlation between academic procrastination and self-esteem. They factor analysed several reasons for procrastination and reported two important factors—Fear of failure and Task aversiveness—self-esteem, loading negatively on fear of failure. Since then, several studies (e.g., Browne, 2016; Chen et al., 2016; Kandemir et al., 2014; Klassen et al., 2008; Karatas, 2015; Senecal et al., 1995; Hajloo, 2014; Vijay and Kadhiravan, 2016) reported negative correlation between self-esteem and academic procrastination. Steel (2007), based on his meta-analysis, estimated a negative correlation –0.27, between self-esteem and procrastination.

Although the role of several cognitive variables in academic procrastination has been well researched, the utility of intelligence as a general construct is questionable in predicting procrastination. For example, Ferrari (1991) found that procrastinators and non-procrastinators did not differ significantly on verbal and abstract intelligence. Ferrari et al., (1995) presented a brief review of the relationship between procrastination, and intelligence and ability. In this review, they cited a study by McCown and Ferrari

in 1995, which indicated that in a specific curriculum, high verbal ability was associated with procrastination of verbal curriculum, while low math ability was associated with procrastination of mathematics-based work. If mathematics-based wok, as compared to verbal curriculum, is assumed to be more complex and difficult, it can be inferred that at least for complex and difficult academic tasks, procrastination is negatively related with the relevant ability.

A few studies have focused on the relationship between course stream or faculty and academic procrastination. Vijay and Kadhiravan (2016) found that Arts faculty university students procrastinated more than the Science faculty students. However, such difference between arts and science background was not found for high school students (Das, 2016). Bashir (2019) reported that among university students, science students procrastinated less than commerce students; the difference between science and arts students was statistically insignificant. Somehow, we could not locate an Indian study exploring faculty-wise differences in academic procrastination in junior college students. Science courses are considered more demanding in terms of intellectual capacity, motivation and efforts. Especially for admission to professional degree courses in engineering, technology, architecture, medicine, etc., the marks obtained in junior college examination or the entrance test, primarily based on junior college syllabi, are crucial. Junior college science students, as compared to arts students, are therefore more performance conscious. As such, we expect that junior college science students would be procrastinating less as compared to arts students. We also expect that science students, as compared to arts students, would have higher intelligence, more achievement values and probably better self-esteem.

There are many studies exploring gender differences in procrastination. Van Eerde (2003), in his meta-analysis, observed that over half of the number of studies reported non-significant gender differences, though some non-significance might be due to inadequate power in studies employing small samples. Steel (2007) commented that men may score higher, lower or the same as women depending upon the procrastination measure. Nevertheless, both the meta-analyses concluded that males are only slightly procrastinating than females. Under such circumstances, we expect that in the present study, gender difference in academic

procrastination, if any, would be small. We also intend to explore whether gender moderates the effect of faculty (course stream) on academic procrastination.

Research Objectives

The present research is guided by three objectives, the first two related to academic procrastination and its correlates, and the third related to quantitative methodology.

- To study the relationship between academic procrastination and achievement values, self-esteem and intelligence among junior college students.
- To study the faculty-wise and gender-wise differences in academic procrastination and explore whether gender moderates the effect of faculty.
- To offer an illustration of the application of multivariate analysis to educational and psychological data.

Broad Hypotheses

Based on the above review, we proposed the following broad hypotheses.

- Science students would procrastinate less than arts students.
- Gender differences in academic procrastination, if any, would be small.
- Academic procrastination would be negatively related with achievement values, self-esteem and intelligence.

Method

Participants

Four hundred and fifty-one junior college students, 239 belonging to Arts faculty (114 males and 125 females) and 212 belonging to Science faculty (100 males and 112 females), participated in this study. The sample was drawn from eight junior colleges of Sangli and Kolhapur districts of Maharashtra. All the students were studying in Class XI. All participants, except six, reported their age as 17 years; the six participants reported their age as 16 years. Majority of the participants had semi-urban or rural background.

Tools

Academic Procrastination Scale (APS) (Kalia and Yadav, 2014)

This Hindi scale consists of 25 items covering four academic areas or dimensions of procrastination: Procrastination in homework (HOPR)—10 items, Procrastination in preparation for examination, EXPR, (6 items), Procrastination in project work (PPR), 5 items, and Procrastination in co-curricular activities, (COP—R)—4 items (area/subscale abbreviations ours). Each item is followed by a five-point rating scale ranging from strongly agree (5) to strongly disagree (1). Nine items are reverse scored. Thus, the scale can provide scores on four subscales and a score on total academic procrastination. Higher score denotes more procrastination. The test manual reports Guttman split-half reliability coefficient of 0.71 and the test-retest reliability coefficient of 0.84. The manual claims satisfactory face and content validity. The scale has been used in quite a few studies (e.g., Kalia and Yadav, 2014; Ahmed and Shumaim, 2017; Mangat, 2019).

Achievement Values and Anxiety Inventory (AVAI) (Mehta, 1976)

This semi-projective tool has 22 items. Each item briefly describes some situation in which one or more persons are doing something. Each situation is followed by six alternatives (sentences) describing some of the ways in which the situation can be interpreted. The respondent is required to mark one alternative which he or she thinks as the best way to describe that situation for him or her. Out of six alternatives for each item, two are achievement related (AR), two are task related (TR) and two are unrelated to achievement (UR). Thus, for every marked item, the respondent gets a score of 1 under one of the three categories. As such, for every respondent, four scores can be obtained: AR score, TR score, UR score, and a total score (i.e., AR – UR). The UR scores tend to show avoidance motive or achievement anxiety. The reliability and validity data, in brief, are available in the manual. The Marathi translation of the AVAI, developed earlier (Jadhav, 1997), has been used in the present research. Only AR scores are employed in this investigation.

Rosenberg's Self-esteem Scale (RSES) (Rosenberg, 1965, 1979)

Developed long back, RSES still continues to be probably the most popular measure of the global self-esteem. It is a 10 item self-report scale, each item followed by a four-point rating scale ranging from

'strongly agree' (3) to 'strongly disagree' (0). [The items can also be scored as '*strongly agree* (4)' to '*strongly disagree* (1)'. This point should be remembered while interpreting mean values.] Five items are reverse scored. Higher score indicates higher self-esteem. Being a very widely used scale, extensive psychometric data are available (Schmitt and Allik, 2005). The scale was translated in Marathi for the purpose of this research.

Cattell's Culture Fair Intelligence Test (CFIT) (Scale 3, Form A, 1963) (Cattell, 1973)

A very well-known non-verbal test of fluid intelligence or Spearman's 'g', this test has four individually timed subtests— (i) series (13 items, 3 minutes), (ii) classifications (14 items, 4 minutes), (iii) matrices (13 items, 3 minutes), and (iv) conditions (topology) (10 items, 2 and 1/2 minutes). The test score is the number of correct answers on all the four subtests together. Being a very widely used test, there is a vast theoretical, empirical and psychometric data for the test.

Procedure

The tests were administered to the students under standard testing conditions at the respective colleges with the prior permission of the principals, in a group of 10 to 30 students at a time. The students were told that the participation was voluntary, and they were assured of complete confidentiality of the responses and results. The tests were administered in the following order: CFFT, APS, AVAI and RSES.

Results

Data Scrutiny and Detection of Univariate and Multivariate Outliers

The data for each variable were scrutinised for the entire sample as well as separately for each of the four groups — arts males, arts females, science males and science females. For this purpose and for detecting univariate outliers, descriptive statistics including skewness and kurtosis, frequency distributions, graphical displays including normal curve-imposed histograms and Q-Q normal plots, and extreme *z* scores were employed (Tabachnick and Fidell, 2019; Meyers et al., 2006; Hair et al., 2003). The search revealed two univariate outliers (subject no. 159, Procrastination for

homework, raw score = 47, z = 4.19 for the entire sample; subject no. 188, Achievement values, raw score = 21, z = 3.51 for the entire sample). These two cases were not deleted; however, to reduce their influence, following Tabachnick and Fidell (2019), each of the two outlying scores was replaced by the raw score which was larger by 1 than the next extreme score.

The multivariate outliers were searched using seven variables—four APS subscales, Achievement values, Self-esteem and Intelligence. (The total Procrastination score was not included, since its inclusion along with its four subscales, would lead to the problem of 'singularity'). The search was carried out for the entire sample as well as for each of the four groups separately. Mahalanobis distance (D^2) was calculated between each case and the centroid of the remaining cases. The cut-off criterion of 24.32 [i.e., value of $x^2(7)$ with p = 0.001] was used. In the group-wise search, only in the group of Arts-Females, one case slightly exceeded the cut-off value (subject no. 303, D^2 = 24.90). For the entire sample, two cases slightly exceeded the cut-off value (subject no. 111, D^2 = 25.99; subject no. 451, D^2 = 24.45). These so few borderline outliers were not excluded from further analysis, a decision in line with Cohen and coworkers (cited in Meyers et al., 2006). Thus, the entire sample of 451 cases was retained for further analysis.

Descriptive Statistics

The descriptive statistics for Academic procrastination and its subscales, Achievement values, Self-esteem and Intelligence, faculty-wise and for the entire sample, are presented in Table 1.

Table 1

Descriptive Statistics for Academic Procrastination and Predictors

Procrastination	**Arts Faculty**		**Science Faculty**		**Entire Sample**	
Scale/Subscale	Mean	SD	Mean	SD	Mean	SD
Academic Procrastination total (APS)	59.09	11.32	53.77	11.13	56.59	11.53
Procrastination in homework (HOPR)	23.93	5.35	21.81	5.85	22.94	5.69
Procrastination in exam preparation (EXPR)	12.17	3.98	11.71	3.96	11.95	3.98

Procrastination in project work (PPR)	11.24	3.89	8.92	3.47	10.15	3.87
Procrastination in co-curricular activities (COPR)	11.77	2.43	11.32	2.06	11.56	2.27
Achievement values (AVAL)	9.10	2.93	9.96	3.55	9.51	3.26
Self-esteem (SEL)	19.09	3.81	20.17	3.96	19.60	3.92
Intelligence (INT)	13.03	4.45	17.75	4.85	15.25	5.20

Academic Procrastination in relation to Course Stream (Faculty) and Gender

The 2 × 2 Hierarchical MANOVA: Justification and Evaluation of the Assumptions

To study the faculty-wise and gender wise differences in procrastination and the moderating effect of gender, if any, a 2 × 2 hierarchical multivariate analysis of variance (MANOVA) was carried out employing Faculty (FAC) and Gender (GEN) as the independent variables and the four Procrastination subscales (HOPR, EXPR, PPR and COPR), as the dependent variables. (Procrastination total scores were not included in this analysis to avoid the problems of singularity.) The order of effects, in priority, was Faculty, Gender and FAC × GEN interaction. With unequal number of cases per cell in factorial designs, hierarchical ANOVA/ MANOVA is especially suitable, provided the priority order of the effects can be specified. [In the present analysis, despite of the different cell sizes, the gender wise distribution of cases in the two faculties is practically proportional (for disproportionality, $x^2(1)= 0.013$, $\phi = 0.005$, $p = 0.91$), thus indicating that the usual regression approach (Type III sum of squares) to ANOVA/MANOVA and hierarchical approach would yield practically the same results.].

The pooled-within-cells correlations among the four subscales range from 0.14 to 0.48, with half of them being 0.40 or above. Bartlett's test of sphericity, applied to pooled-within-cells correlation matrix, yielded a test statistic 258.02 ($df = 6$, $p< 0.001$), and indicated that the pooled-within-cells correlation matrix significantly departed from the identity matrix, justifying the application of MANOVA. No issues, related to multicollinearity, were detected.

The assumption of multivariate normal distribution for residuals was evaluated by Q-Q chi-square plot, with sample quantiles of Mahalanobis distance (D^2) for the set of four residuals on X axis and the corresponding theoretical chi-square quantiles on Y axis (Johnson and Wichern, 2007). The correlation between two quantiles turned out to be 0.992 (95 per cent confidence interval through bootstrapping, using 10,000 bootstrap samples, being 0.990 to 0.993) suggesting reasonably satisfactory multivariate normality. The assumption of homogeneity of covariance matrices was also satisfied (Box's $M = 38.23$, $x^2(30) = 37.61$, $p = 0.16$).

The ratio of subjects to number of dependent variables is 25 even in the smallest cell, thus indicating the adequacy of sample size (guidelines by Kres, 1983, cited in Huberty and Petoskey, 2000). Thus, the assumptions underlying MANOVA are met quite satisfactorily in the present analysis.

Table 2

Summary of 2 × 2 Hierarchical MANOVA using Wilks' Λ as a Test Statistic

Effect	Wilks' Λ	F	Hypothesis *df*	Error *df*	p	Partial η^2 mult
Faculty (FAC)	0.897	12.70	4	444	<0.001	0.103@
Gender (GEN)	0.982	1.99	4	444	—	—
FAC × GEN	0.980	2.28	4	444	—	—

— Denotes insignificant; Effect size (Partial η^2 mult) not reported.
@Cohen's f^2= .11 (Near-medium effect size).

The Results of the MANOVA. The results of the 2 × 2 hierarchical MANOVA are presented in Table 2.

The results in Table 2 indicate that the main effect of Faculty is significant at 0.001 level [Wilks' Λ = 0.897, F (4,444) = 12.70, p< 0.001, partial $\eta^2_{mult} = 0.103$]. The partial η^2_{mult} of 0.103 suggests that the Faculty explains 10.3 percent of variance in the corresponding canonical variate. A reference to Table 1 indicates that on academic procrastination total and all four subscales, science students scored less than the arts students. Thus, the results supported hypothesis 1 stating 'science students would procrastinate less than arts students'. We label the effect size as 'small to medium'

(Cohen's f^2= 0.11, Cohen, 1988, p. 481). The structure coefficients, i.e., the correlations between the dependent variables and the associated canonical variate, are: PPR (–0.93), HOPR (–0.56), COPR (–0.30), and EXPR (–0.17). Thus, the faculty-wise difference in academic procrastination appears to be contributed by three areas, procrastination in project work, homework and co-curricular activities. This is confirmed by the results of univariate analyses accompanying the MANOVA output. Thus, the main effect of faculty is significant for PPR [F (1, 447) = 43.92, p< 0.001, partial η^2 = 0.089, medium effect size], HOPR [F (1, 447) = 16.32, p< 0.001, partial η^2 = 0.035, small effect size], and COPR [F (1, 447) = 4.56, p< 0.05, partial η^2 = 0.010, small effect size]. Needless to say, the main effect of Faculty is insignificant for EXPR [F (1, 447) = 1.53, p> 0.05]. Incidentally, the univariate F ratio for the main effect of Faculty on Academic procrastination total score is also highly significant— [F (1, 447) = 25.19, p< 0.001, partial η^2 = 0.053, small effect size], thus supporting hypothesis 1.

The main effect of Gender and FAC × GEN interaction are statistically insignificant. As such, to save space, gender-wise and faculty by gender wise descriptive statistics for the APS and its subscales are not presented in Table 1. The results support hypothesis 2 stating 'Gender differences in academic procrastination, if any, would be small'. The insignificant FAC × GEN interaction implies that the effect of Faculty is not moderated by Gender.

Academic Procrastination in relation to Achievement Values, Self-esteem, Intelligence and Course-stream

We have four subgroups in the sample— art males, art females, science males and science females. For computing bivariate correlations among the seven variables (four subscales of the APS, Achievement values, Self-esteem and Intelligence) we had three options— first, computing and interpreting correlations separately for each subgroup; second, computing pooled within-cells correlations (after adjusting for the effects of Faculty, Gender and the Interaction); and third, pooling the four subgroups and computing correlations for the entire sample. The preliminary analyses showed that the natural logarithms of the determinants of the covariance matrices for the four subgroups are 17.64, 16.98, 17.22 and 17.86, respectively. These four values are 'in the same

ball park' (Huberty and Petoskey, 2000, p. 195) suggesting that the four subgroups appear to have the similar pattern of relations among the seven variables. The data were further examined for subgroup-wise differences, subgroup sample sizes and the magnitudes of the correlations (Sockloff, 1975). This scrutiny indicated that the four subgroups could be combined for further correlational analyses. This option would be in line with the recommendations of Charter and Alexander (1993). Actual analyses revealed that the correlations based on the entire sample and the corresponding pooled within-cells correlations were very similar, the difference being only at the third or second decimal place. We preferred to report correlations based on the entire sample since they have advantages for the multivariate analysis employing dummy variables. The 9 × 9 correlation matrix, based on seven variables listed in the beginning of this section, the APS total scores and Faculty, is presented in Table 3. Faculty was treated as a dummy variable (Arts faculty coded 0, and Science faculty coded 1); the correlations of Faculty with other continuous variables are point biserial correlations).

Table 3

Correlation Matrix among Nine Variables

Var. #	APS	HOPR	EXPR	PPR	COPR	AVAL	SEL	INT	FAC
APS	1.00								
HOPR	–	1.00							
EXPR	–	0.47***	1.00						
PPR	–	0.49***	0.39***	1.00					
COPR	–	0.14**	0.16***	0.16***	1.00				
AVAL	–0.25***	–0.25***	–0.20***	–0.19***	0.05	1.00			
SEL	–0.28***	–0.23***	–0.24***	–0.24***	0.01	0.18***	1.00		
INT	–0.23***	–0.12**	–0.14**	–0.31***	–0.10*	0.15**	0.14**	1.00	
FAC@	–0.23***	–0.19***	–0.06	–0.30***	–0.10*	0.13**	0.14**	0.45***	1.00

*** p <0.001; ** p <0.01; * p <0.5. # Abbreviations: See Table 1, Column 1.

@ Correlations of Faculty with other variables are point biserial correlations, Arts faculty coded 0, and Science faculty coded 1. — 'Spurious' correlations due to 'part-whole' relationship (Guilford and Fruchter, 1985, pp. 331–332); hence not reported.

Bivariate Correlations

From Table 3, we note four points:

1. The correlations of Academic procrastination (total) with Achievement values (r= –0.25, p< 0.001), Self-esteem (r= –0.28, p< 0.001) and Intelligence (r= –0.23, p< 0.001) support hypothesis 3. As per Hopkins' (2002) effect size benchmarks, these correlations are small.
2. Faculty correlated negatively with total academic procrastination (r= –0.23, p < 0.001, small effect size). Since Science faculty is coded 1 and Arts faculty is coded 0, the negative correlation implies that the science students procrastinated less than the arts students, thus supporting hypothesis 1.
3. The correlations among the first three subscales of Academic Procrastination, HOPR, EXPR and PPR are quite satisfactory, especially in view of the small number of items in each subscale. However, the correlations of these three subscales with the fourth subscale (COPR) are small, though statistically significant by virtue of large sample size.
4. Achievement values, Self-esteem, Intelligence and Faculty appear to correlate more with the first three subscales of Academic Procrastination than with the fourth subscale (COPR).

Multiple Regressions/ Correlations

We carried out multiple regression with total Academic procrastination as the DV and Faculty (dummy variable), Achievement values, Self-esteem, and Intelligence as predictors. The advantages of using dummy variable as a predictor in multiple regression are discussed by Draper and Smith (2003). The results are presented in Table 4.

Table 4

Results of Multiple Regression with Academic Procrastination (Total Score) as a DV

Predictors	Unstandardized Coefficients		Standard Coefficients	t	P
	B	Standard error	Beta		
(Constant)	80.08	2.97		26.96	<0.001
Faculty	–2.85	1.13	–0.12	2.52	≈0.01
Achievement values	–0.62	0.16	–0.18	3.96	<0.001

Self-esteem	–0.62	0.13	–0.21	4.72	<0.001
Intelligence	–0.27	0.11	–0.12	2.47	≈0.01

The results in Table 4 indicate that the regression coefficients associated with all four predictors are statistically significant. The multiple correlation is 0.40 [F (4, 446) = 21.01, p< 0.001). The four predictors explain 15.9 per cent variance in Academic procrastination. The examination of the results support hypotheses 1 and 3. Following Cohen's (1988) benchmarks for multiple correlations, the present value can be labeled as 'medium'.

Using standard multiple regression, multiple correlations were obtained between each of the academic procrastination subscale and the set of four predictors—Faculty, Achievement values, Self-esteem and Intelligence. The standard multiple regression was preferred to stepwise regression, since the latter capitalises on chance more and the replicability across samples is less (Tabachnick and Fidell, 2019). The results are summarised in Table 5.

Table 5

Multiple Correlation of Academic Procrastination Subscales with Faculty, Achievement Values, Self-esteem and Intelligence as Predictors

Dependent variable	Multiple R	F (4, 446)	p	Effect size	PV*
Procrastination in homework	0.34	14.48	< 0.001	Small	11.5
Procrastination in exam preparation	0.30	11.39	< 0.001	Small	9.3
Procrastination in project work	0.42	23.56	< 0.001	Medium	17.4
Procrastination in co-curricular	0.13	2.00	> 0.05	—	1.8

* Per cent of variance explained in DV.

The results in Table 5 indicate that the set of predictors explain 11.5, 9.3 and 17.4 percent variance respectively in the first three subscales — Procrastination in homework (R = 0.34, p< 0.001, small effect size), Procrastination in preparation for examination (R = 0.30, p< 0.001, small effect size) and Procrastination in project work (R = 0.42, p< 0.001, medium effect size). The multiple

correlation of the fourth subscale, Procrastination in co-curricular activities, with the four predictors is statistically insignificant.

Multivariate Multiple Regression and Canonical Correlations Analysis

The multivariate multiple regression (MMR) (Rencher, 2002) and canonical correlations analysis (CCA) have lots of conceptual, mathematical and procedural commonalities. As such, we present their selected results jointly. The four subscales of Academic procrastination constituted set 1 or the set of DVs and Faculty, Achievement values, Self-esteem and Intelligence as set 2 or the set of predictors. The results of the MMR are presented in Table 6.

Table 6

Summary of the Results of Multivariate Multiple Regression

Effect	Wilks' Λ	F	df 1	df 2	P	Partial η^2	Effect Size
Entire model	0.741	8.74	16	1354	<0.001	0.259	
Faculty	0.952	5.60	4	443	<0.001	0.048	Small
Achievement values	0.943	6.64	4	443	<0.001	0.057	Small
Self-esteem	0.938	7.32	4	443	<0.001	0.062	Small
Intelligence	0.955	5.26	4	443	<0.001	0.045	Small

The results in Table 6 indicate that the multivariate tests, one for the entire model and the others for each of the four predictors, are significant. The multivariate test for the entire model in MMR is equivalent to the test of independence between the two sets of variables in CCA; the significant value for Wilks' Λ rejects the null hypothesis of independence. The term 1 - Λ (i.e., 0.259) indicates the multivariate association between the two sets and is labeled as 'Hotelling-Rozeboom measure' (Cramer and Nicewander, 1979) or 'set correlation', R^2 Y, X (Cohen, 1988). It suggests that 25.9 per cent of generalised variance of the set of procrastination subscales can be accounted by the set of four predictors.

To clarify the picture through CCA, four canonical correlations 0.44, 0.25, 0.15 and 0.01 were obtained. Although the first three canonical correlations could be retained based on dimension reduction analysis, the second and third canonical correlations

are reasonably small and their contribution toward redundancy is low. As such, only the first canonical correlation (CR1) has been interpreted. The results are summarised in Table 7.

Table 7

Summary of Results for the First Canonical Correlation

Variables	Standardised Canonical Coefficients	Structure Coefficients	Percent Variance Condensed	Redundancy Percent (DVs)
Set 1: Dependent Variables				
Procrastination in homework	−0.289	−0.726	52.7	10.2
Procrastination in exam preparation	−0.203	−0.612	37.4	7.2
Procrastination in project work	−0.724	−0.932	86.9	16.7
Procrastination in co-curricular activities	0.080	−0.109	1.2	0.2
Percent of variance condensed by first canonical variate of DVs			44.5	
Set 2: Predictors				
Faculty	0.340	0.624	40.0	
Achievement values	0.397	0.584	34.1	
Self-esteem	0.492	0.661	43.7	
Intelligence	0.360	0.640	41.0	
Percent of variance condensed by first canonical variate of predictors			39.4	
First canonical correlation: 0.44				

The standardised canonical coefficients can be used for computing canonical variate scores. The examination of structure coefficients and the per cent variance condensed column indicate that the first canonical variate of the DVs condensed substantial variance from the first three subscales but ignorable variance from the COPR. The first canonical variate of DVs condensed 44.5 per cent variance from its own set. The first canonical variate of predictors also condensed substantial variance from each of the four predictors, thus extracting 39.4 per cent variance from its set. The first pair of canonical variates correlated 0.44. In other words,

the first pair of canonical variates have 19.3 per cent common variance or that the first canonical variate of the predictors explained 19.3 per cent variance in the first canonical variate of the DVs. The examination of the structure coefficients of the two sets revealed that the students with higher achievement values, higher self-esteem and higher intelligence procrastinate less. Thus, the results are in line with Hypothesis 3. The tendency of science students to show comparatively less academic procrastination than the arts students is also indicated. The redundancy column indicates that the canonical variate of predictors explains enough variance in the first three subscales but practically zero variance in the COPR. The average redundancy for the first three subscales is 11.4 per cent. A comparison of the last columns of Table 7 and Table 5 indicates that the first canonical correlation alone has captured the major redundancy of the Procrastination subscales, thus justifying the interpretation of the first canonical correlation only. Thus, in the present analysis, the CCA results are well supplemented by the redundancy analysis, in spite of its several limitations and not being considered as 'multivariate in the strict sense' (Cramer and Nicewander,1979, p. 43). An interesting result, not presented in Table 7, is that the canonical variate of predictors can explain 15.8 per cent variance in the APS total scores, a value which is extremely close to the results reported in Table 4 using multiple regression.

The post analysis diagnosis revealed that the assumptions underlying MMR and CCA were well satisfied including the multivariate normal distribution of the residuals, and satisfactory (1:56) variables to subjects ratio.

Discussion

The present research has yielded some interesting results. All the three hypotheses are verified. Since the rationale-cum-explanation for these hypotheses is already provided in review, it is not repeated here. As predicted by Hypothesis 1, science students procrastinated less than the arts students. These results are in line with the findings of Vijay and Kadhiravan (2016) for university students. The findings (Results Section 3.2) further revealed that the faculty-wise difference in total academic procrastination is more due to procrastination in project work [F (1, 447) = 43.92, p< 0.001, partial η^2 = 0.089, medium effect size], followed by

procrastination in homework [F (1, 447) = 16.32, p< 0.001, partial η^2 = 0.035, small effect size], and procrastination in co-curricular activities [F (1, 447) = 4.56, p< 0.05, partial η^2 = 0.010, small effect size]. In science curriculum and teaching, as compared to arts curriculum, there is more emphasis on projects and practical work and procrastination in this regard may have adverse consequences. Also, the students having comparatively more leaning for projects and practical work would join the science stream. This explains the medium effect size for the PPR subscale.

In line with Hypothesis 2, the present research did not reveal gender differences in academic procrastination. Employing the same academic procrastination scale used in the present research, some studies (e.g., Kalia and Yadav, 2014; Prasad, 2017; Mangat, 2019) did not obtain gender difference, whereas another study (Ahmed and Shumaim, 2017) reported boys scoring higher on procrastination than girls. The present finding, however, cannot be regarded as tool specific. For example, Gartia et al., (2011), using Tuckman Procrastination Scale, reported absence of gender difference in a sample from Odisha. Such findings are in line with meta-analytic results of Van Eerde (2003) and Steel, (2007). The present research also revealed that gender did not moderate the faculty-wise difference in academic procrastination.

The bivariate correlations provided evidence in favour of Hypothesis 3. The results of multiple regression (Table 4), with total academic procrastination as the DV and Faculty, Achievement values, Self-esteem and Intelligence as predictors, yielded a multiple correlation of 0.40 [F (4, 446) = 21.01, p< 0.001, medium effect size) and provided further evidence for Hypothesis 3. The beta coefficients associated with each of the four predictors are significant and the four predictors explain 15.9 per cent variance in total academic procrastination. The multivariate multiple regression (MMR) (Results Section 4.3, Table 6) suggested that although the effects of each predictor are small, the set of four predictors account for 25.9 per cent generalised variance in the set of Academic procrastination subscales [Wilks' Λ = 0.741, F (16, 1354) = 8.74, p< 0.001]. The results of canonical correlations analysis (CCA) (Table 7), especially the first canonical correlation (CR1) of 0.44 and the associated canonical variates, are also in line with Hypothesis 3.

From Table 3, we note the point biserial correlations of Faculty with Intelligence (r = 0.45, p< 0.001, medium or near-large effect

size), Achievement values (r = 0.13, p< 0.001, small effect size) and Self-esteem (r = 0.14, p< 0.001, small effect size). Since Arts is coded 0 and Science is coded 1, the positive point biserial correlations indicate that science students, as compared to arts students, have higher intelligence, more achievement values and better self-esteem. It seems that students with higher intelligence, more achievement values and better self-esteem tend to opt for science faculty over the arts faculty; however, the effect sizes of achievement values and self-esteem are small. At this point, the effect sizes of Faculty for its effect on Academic procrastination need to be revisited. Table 2 reports the partial η^2_{mult} of 0.103, a nearly medium effect size for Faculty. Table 6, however, reports the partial η^2_{mult} of 0.048 (small effect size) for Faculty, which represents the effect size for Faculty, when the effects of achievement values, self-esteem and intelligence are partialed out. Thus, the relationship between faculty and academic procrastination is partially accounted by achievement values, self-esteem and intelligence.

Here we briefly recapitulate a few results. As per the results (Table 3), the first three subscales of the Academic Procrastination Scale—Procrastination in homework (HOPR), Procrastination in preparation for examination (EXPR), Procrastination in project work (PPR) intercorrelate quite satisfactorily. However, the correlations of these three subscales with the fourth subscale, Procrastination in co-curricular activities (COPR) are small, though statistically significant. Moreover, Achievement values, Self-esteem, Intelligence and Faculty appear to correlate more with the first three subscales of Academic Procrastination than with the fourth subscale. Results (Table 5) indicate that Achievement values, Self-esteem, Intelligence and Faculty explain 11.5, 9.3 and 17.4 per cent variance respectively in the first three subscales — HOPR (R = 0.34, p< 0.001, small effect size), EXPR (R = 0.30, p< 0.001, small effect size) and PPR (R = 0.42, p< 0.001, medium effect size); but the multiple correlation of the fourth subscale, COPR, with the four predictors is statistically insignificant. Results (Table 7) indicate the canonical variate of the DVs (Procrastination subscales) condense 52.7 per cent variance from the HOPR, 37.4 per cent variance from the EXPR, 86.9 per cent variance from the PPR, but only 1.2 per cent variance from the COPR. Similarly, the canonical variate of the predictors explains 10.2 per cent variance in the HOPR, 7.2 per cent variance in the EXPR, 16.7 per cent variance in the PPR, but only 0.2 percent variance in the COPR. The results,

recapitulated in this paragraph clearly reveal that the fourth subscale, Procrastination in co-curricular activities, is distinct from the first three subscales. Homework, examination preparation and project work, all three constitute curricular activities. Thus, the present work suggests a distinction between procrastination in curricular activities and co-curricular activities, both in terms of covariation among the subscales and the relationship with psychological variables like achievement values, self-esteem, and intelligence and demographic variable like faculty (course stream). This finding is not in line with that of Kalia and Yadav (2014), who reported four subscales (dimensions) sufficiently correlated. However, their sample was a mixed sample of secondary and senior secondary students, the latter corresponding to junior college or higher secondary stage in Maharashtra. We speculate that junior college students, as compared to school children, probably because of their better developed cognitive abilities and sense of freedom from teachers' pressure, discriminate curricular and co-curricular demands and respond to them independently. As compared to curricular activities, the students and perhaps the teachers and the concerned system, undervalue the co-curricular activities, although they play a crucial role in the holistic development of the students. Probably in response to such situation, the *National Education Policy* (2019 draft) has called for 'no hard separation of content in terms of curricular, extracurricular, or co-curricular' areas (p. 78, sec. P.4.4.2).

To sum up, the present research has replicated the findings of negative relationship between academic procrastination and achievement values, self-esteem and intelligence. The present research has also demonstrated that science students procrastinate less than the arts students and this faculty-wise difference is partially accounted by variables like achievement values, self-esteem and intelligence. Neither gender differences were obtained in academic procrastination nor gender moderated the effect of faculty. An interesting finding, however, is the empirical distinction between procrastination in curricular and co-curricular activities. The relationship between academic procrastination and achievement values, self-esteem and intelligence is attributed to procrastination in curricular activities and not procrastination in co-curricular activities.

The present study has several clinical, educational, psychometric and research implications, a few of which are hinted here. Zacks

and Hen (2018) reviewed and categorised the approaches to reduce academic procrastination in three categories: (i) therapeutic treatment, (ii) therapeutic prevention and (iii) instructor/teacher intervention. The present study suggests that in these intervention programmes, there should be inputs to improve self-esteem and cultivate achievement values. This suggestion is in line with Van Eerde and Klingsieck's (2018) call 'for future intervention studies based on self-determination theory' (p. 82) which emphasises intrinsic motivational processes. The present study also contributes some basic data necessary for counselling the junior college students and a slightly younger group from rural and semi-urban Maharashtra and similar locales. While developing the tools to assess academic procrastination, the distinction between procrastination for curricular and co-curricular activities should be remembered and item writing and psychometric methodology should be planned accordingly. Research is also needed to demonstrate these two factors through appropriate factor-analytic studies. The application of multivariate methodology, in the present study, has added new insights to our understanding of academic procrastination, and we urge Indian researchers in this arena to undertake further multivariate explorations.

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Concept Maps for Teaching-Learning

An Analysis of Teachers' Classroom Practices and Perspectives

Anjuli Suhane* and Vibha Joshi**

Abstract

The present research attempts to examine teachers' perspective and classroom practices in the use of concept maps in teaching-learning, assessment and the scores of assessment of the use of concept maps. Main objectives were to analyse teachers' classroom practices regarding the use of concept maps, their views about the use of concept maps in planning, teaching-learning and assessment tools and to find out a scoring system adopted by teachers to assess learner's learning through concept maps. A questionnaire was administered to 205 purposefully selected secondary school teachers from Bhopal district of Madhya Pradesh, India. The study revealed that about one third of teachers had used concept mapping as an approach for transaction purposes but a negligible or a few of them had used it as a tool for assessment. According to teachers concept map is a useful, effective and practical tool for transacting or teaching concepts; helps in retention and recall of concepts by learners and provides detailed feedback on the understanding of the concepts learnt. It was also found that the concept map was more valuable for formative assessment rather than summative assessment. Majority of the teachers reported that assessment through concept maps is a rigorous and time consuming process.

Keywords: *Concept Map, Classroom Practices, Teaching-Learning.*

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सार

प्रस्तुत शोध अवधरणा मानचित्रों के शिक्षण-अधिगम तथा मूल्यांकन में प्रयोग पर शिक्षकों के दृष्टिकोण तथा कक्षा गतिविधियों पर आधारित है। इस शोध के मुख्य-उद्देश्य शिक्षकों द्वारा अवधरणा मानचित्रों के कक्षा गतिविधियों में प्रयोग का विश्लेषण, अवधरणा मानचित्रों के प्रमुख प्रयोग जैसेः योजना बनाना, अध्ययन अधिगम तथा मूल्यांकन उपकरणों पर शिक्षकों के विचार एवं अवधरणा मानचित्रों द्वारा छात्रों की सीखने के स्तरों का मूल्यांकन करने के लिए उपयुक्त स्कोरिंग प्रणाली का पता लगाना था। इस शोध में आंकड़ों के सग्रह हेतु मध्य प्रदेश के भोपाल जिले के 205 उद्देश्यपूर्ण रूप से चयनित माध्यमिक विद्यालयों के शिक्षकों पर एक प्रश्नावली प्रशासित की गई। इस अध्ययन से यह ज्ञात हुआ है कि लगभग एक तिहाई शिक्षकों ने लेने-देन के उद्देश्यों के लिए अवधरणा मानचित्रण का उपयोग एक उपागम के रूप में किया, जबकि बहुत कम शिक्षकों ने इसका प्रयोग मूल्यांकन के लिए किया। शिक्षकों का विचार था कि अवधरणा मानचित्र अवधरणाओं को व्यवहार में लाने या सिखाने के लिए एक उपयोगी, प्रभावी और व्यावहारिक उपकरण है। यह अवधरणाओं को बनाए रखने और याद करने में मदद करता है और सीखी गई अवधरणाओं की समझ पर विस्तृत प्रतिक्रिया प्रदान करता है। शोध में यह भी पाया गया कि अवधरणा मानचित्र योगात्मक मूल्यांकन की अपेक्षा रचनात्मक मूल्यांकन के लिए अधिक महत्त्वपूर्ण है। अधिकांश शिक्षकों ने अपने अनुभव साझा करते हुए बताया कि अवधरण मानचित्रों के माध्यम से मूल्यांकन एक कठिन और समय लेने वाली प्रक्रिया है।

Introduction

An effective teacher is one who incorporates learner's prior knowledge and experiences in teaching-learning situations. The main focus of any education system is development of knowledge, skills and other higher order skills in learners and facilitate construction of knowledge by them. Learning integrating prior knowledge and experiences of a learner leads to meaningful learning. This knowledge construction is possible through understanding of the relationship and hierarchy formation between important sets of concepts, their interlinkages and creation of new knowledge. Concept mapping is a strategy that uses prior knowledge and experiences of learners' interrelationships of concepts and their implications in the generation of new knowledge. Concept mapping as teaching-learning strategy plays a vital role in systematic and structural form of knowledge construction which promotes meaningful learning (Mutodi and Chigonga, 2016; Rao, 2004).

Concept Map

Concept maps were developed in 1972 in the course of Novak's research programme at the Cornell University where he sought to follow and understand changes in children's knowledge of science (Novak and Mosonda, 1991). Since then concept maps have been used in various ways in teaching-learning process (Novak and Gowin, 1995). This technique or method is based on Ausubel's Assimilation Theory (1968). It assumes that learners construct new knowledge, being already influenced by their previous knowledge and experiences. "Concept maps are graphical tools for organising and representing knowledge. They include concepts, usually enclosed in circles or boxes of some type, and relationships between concepts is indicated by a connecting line linking two concepts. Words on the line, referred to as linking words or linking phrases, specify the relationship between the two concepts" (Novak and Canas, 2006). It expresses graphically structured meaningful relationships existing between different concepts (Ruiz-Primo et al., 2001).

Concept Mapping in Teaching and Assessment

Concept mapping as a tool can be used in a variety of contexts like planning for a theme, topic or unit, for transaction of a lesson and for meaningful learning and comprehensive assessment of learning by a teacher. It is an effective tool to assess various aspects like learner's knowledge, understanding and other higher level skills. Concept map are used in some of the following ways.

As a Planning Tool

Concept maps can be used for unit planning. It helps a teacher in planning of learning activities to enhance learning experiences of learners. As a planning tool, it can help teachers to plan, structure and sequence the content of their teaching. Concept maps help teachers to visualise what they want to teach, and how different themes or sub-themes are linked, so continuity of experiences is ensured. This planning role also helps teachers to develop and organise content points to be covered in a lesson in the stipulated time and subsequent activities that integrate different themes meaningfully. The mapping process also helps teachers to identify concepts that are linked to other disciplines, which may facilitate movement beyond the traditional disciplinary boundaries and integrate content in multi-disciplinary, interdisciplinary and

trans-disciplinary manner. This planning role also promotes collaborative teaching approach among teachers as teachers can plan their teaching in a group and subsequently relate each other's teaching points clearly.

As a Teaching-Learning Approach

Concept map can be used as an excellent approach for transaction of a theme or topic. As already mentioned earlier, it is based on Ausubel's theory of Meaningful Verbal Learning. This approach focuses on learners to learn about the structure of knowledge and the process of knowledge production. It helps learners in enhancing their retention and promotes holistic and integrated learning over rote learning. Teachers can use concept mapping to enhance learner participation and presentation skill, organise teaching during group discussions or presentations.

While introducing a theme or topic within a course, concept maps can be useful. They can be useful means of communicating to learners what they will be studying. Further they would help in assessing their prior knowledge and experiences and also provide them with a comprehensive or detailed overview of the topic. Presentation of concept maps may be done digitally, on smart boards or on simple blackboards. The teacher could either present or create a concept map on the board (or computer) or involve learners by inviting their comments and feedback. This will make a classroom teaching-learning experience an interactive, and participative process and result in meaningful learning.

As an Assessment Tool

Traditionally, teachers use paper and pencil tests to assess the learning. Advancements in the evaluation technology and adoption of improved assessment tools have made significant changes in the assessment practices. The introduction of Continuous Comprehensive Evaluation (CCE), assessment has changed the process and procedure a lot in schools. There is a drastic shift in the process of learning assessment, which is perceived as an integral part of the teaching-learning process. This shift has also brought a shift in the existing or traditional ways (tools and techniques) of assessment. Still in majority of the schools techniques like role plays, crossword puzzle, flow charts, field trips, class work/homework assignments, group work, survey, project work, worksheets, games, etc., are used, though all these are very useful in assessment too,

but they do not find a place for assessment of learner's knowledge and understanding. Novak and Canas (2006) advocated the need for better ways to represent learners' conceptual understanding in the form of concept maps as an alternative assessment tool. The presence of concepts and their relationships on a map can provide a teacher a snapshot of learner's knowledge and understanding. The proximity and connection of key concepts also provide insight for teachers attempting to evaluate how ideas from class are being incorporated. A graphical or visual representation of a concept map is given below:

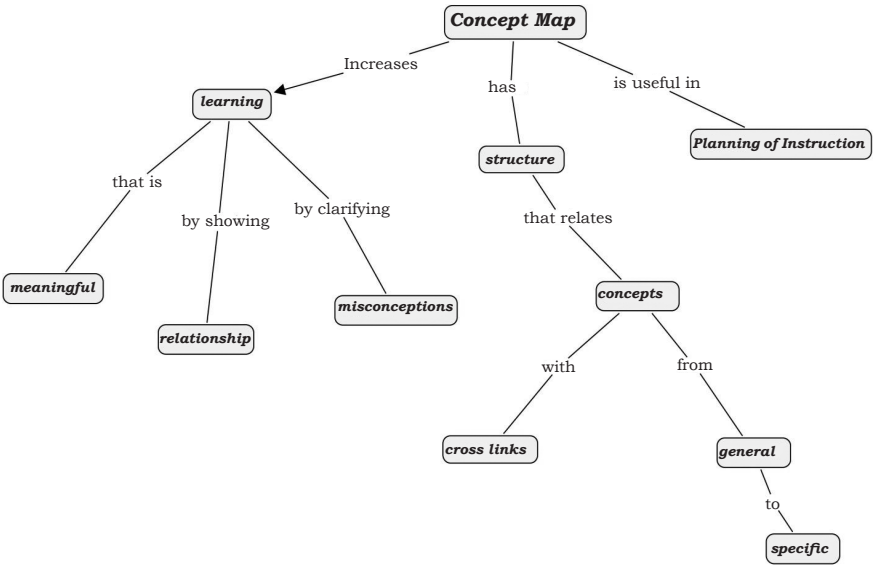

Figure1: Concept Map on 'Importance of Concept Map (Prepared by the first author)

In recent years, along with the introduction and adoption of a number of innovative methods in the teaching-learning situations, constructivism as a theory has gained acceptance in the classrooms, and involves an individual's construction of meanings. New linkages or construction are built through their relations to prior knowledge in the learning contexts. Concept mapping as an approach, helps learners to create new knowledge on the background of prior knowledge, which is elaborated and changed on the basis of the new or fresh meaning negotiated with peers and teachers. So to make teaching-learning interactive and learner centred, teacher can use concept maps in planning, teaching as well as in assessment.

Considering the importance of concept mapping as a tool for teaching-learning process, the study was undertaken to examine teachers' views, beliefs and opinions on concept mapping as a planning, teaching and assessment tool. The main focus of this paper is to study teachers' perspectives on the effectiveness of concept maps as a planning, teaching and assessment tool and their use in assessing learners' knowledge structure.

Overview of Literature

A number of studies reported that when learners were taught through concept mapping strategy, their learning improved over conventional method (Filgona, J. et al., 2016; Ghorai and Guha, 2018; Martins-Omole, 2016; Sakiyo and Waziri, 2015; Shakoori, Kadivar and Sarami, 2017). Some studies were conducted on the relationship with other variables like concept mapping as a strategy and attitude towards science disciplines (Alebiosu, and Michael, 2011); the use of concept mapping as a strategy to enhance meaningful learning and to improve upon the process skills of learners in science (Rao, 2004). Hay, Kinchin and Lygo Baker, (2008) asserted that concept map measures those aspects of learning which conventional tests fail to measure such as learners' misconceptions. Mutodi and Chigonga (2016) found that mathematics teachers generally perceive that concept map is useful, effective and is a practical tool for teaching mathematical concepts, represents and organises knowledge, helps retention and recall of concepts learnt and provides feedback on the understanding of the concepts learnt. Chiou (2008) indicated in his study that concept mapping can help learners to understand, integrate and clarify accounting concepts and also enhance their interests in learning accounting. Vodovozov and Raud (2015) argued that a concept map is effective as a teaching and learning tool rather than as an assessment tool. The use of concept maps as an alternative assessment tool has been recognised but teachers continue to use it as an instructional tool rather than as an assessment device (Reyneke, Meyer and Nel, 2010).

Reviewing various research studies conducted in the area has helped researcher to zero down to the research questions and objectives of the present study. An overall view of the review of previous studies revealed that a lot of researches have been conducted in the area of concept mapping as a tool for teaching-learning. A few studies were done in the area of concept maps

as an assessment tool. The research gap is that though there are quite a good number of studies in this area, very few studies have attempted to find out practices and perspective on the use of concept mapping in all the three major aspects, i.e., planning, teaching-learning and assessment. Hence, the present study intended to explore secondary school teachers' classroom practices and their perspective regarding the use of concept mapping in their day-to-day teaching and assessment.

Research Questions

The study attempted to answer the following research questions.

- In what ways concept maps are being used by teachers in their day-to-day teaching-learning?
- What are the opinions of teachers about the use of concept maps in planning their teaching of a unit, theme or course?
- What are the views of teachers about the use of concept mapping as an approach for teaching-learning?
- What are the views of teachers about the use of concept mapping as an assessment tool to understand or judge their learners' achievement?
- What are the criteria or scoring systems adopted by the teachers to assess concept maps for learners' learning?

Rationale of the Study

This study sought to find out in what ways concept maps are used in the teaching-learning process in the classrooms and also to gain insights into teachers' perspectives about the use of concept maps in planning, teaching-learning and assessment purposes. It also focused on how concept maps are used by teachers in their day-to-day teaching-learning and their views on the use of concept mapping in meaningful learning and assessment of learners' overall understanding of conceptual structure. It also intended to prove further in studying the opinions of teachers about learners' abilities to link and relate ideas across topics and/or subjects in the form of a conceptual map. Although some of the studies reported in the review section supported concept mapping as a teaching and learning strategy, it mainly focused on the use of concept mapping as a tool to assess learner understanding rather than as planning and assessment tools. Through this study, an

attempt has been made to find a scoring system used by teachers to assess concept maps. Therefore, the objective of the study is to investigate teachers' classroom practices regarding the use of concept mapping in various ways; their views, feelings and beliefs about the use of concept maps in planning, teaching-learning and assessment and also scoring criteria used for the assessment of concept maps.

Objectives

The specific objectives of the study were:

- To explore teachers' classroom practices regarding the use of concept maps.
- To analyse teachers' views about the use of concept maps in the planning of unit, theme or course.
- To examine views of teachers about the usability, advantage and limitations of concept mapping as an approach for teaching-learning.
- To assess the teachers' views on usability, importance and limitations of concept maps as an alternative assessment tool.
- To find out the scoring criteria adopted by the teachers for the assessment of concept maps.

Delimitations

This study was limited to teachers working in the Central Board of Secondary Education (CBSE) affiliated secondary schools of Bhopal city of the Madhya Pradesh, India.

Operational Definitions

Practices: Practices in the present study means — current practice of the use of concept maps in planning, teaching-learning and assessment in the day-to-day classroom processes.

Perspective: A perspective is a particular way of thinking about something or to view things in their true relations or relative importance. In the study, teachers' perspective means views of teachers about the use of concept map as a planning, teaching-learning and assessment tool. In this study perspective towards concept mapping for teaching-learning process has been categorised under the following sub-categories:

- Perspective towards concept maps as a planning tool

- Perspective towards concept mapping as a teaching-learning approach, and
- Perspective towards concept maps as an assessment tool.

Method

Research Design

This study was a descriptive survey. It was a quantitative cum qualitative study conducted on teachers. The survey was conducted through Google form.

Sample

The target population for the study consisted of teachers working in the CBSE affiliated secondary schools of Bhopal. Using convenient sampling, 205 secondary school teachers of science, social science and language disciplines were drawn from 10 private-management and four government-management schools. A graphical presentation of school wise and discipline-wise distribution of sample is given in the following table.

Table 1

School-wise and Discipline-wise Sample Distribution

Type of School, Discipline	Private-management School- Teachers (120)	Government-management School-Teachers (85)	Total number of teachers (205)
Science	45	33	78
Social Science	46	37	83
Language	29	15	44

Tools for the Study

A questionnaire was developed by the researcher and administered online to collect the data. The questionnaire had four sections, i.e., A, B, C and D. Section A contained questions on teachers' biographic information. Section B had five closed ended questions with yes/no responses related to teachers' views on their classroom practices regarding the use of concept maps. Section C had 30 closed-ended items on 3 points rating. These items are related to

usability, advantages and limitations of concept maps as a planning tool, teaching-learning approach and assessment tool and the last Section D had one open ended question based on a scoring system used by teachers to assess concept map(s) and also their learner's performance. Section D was applicable only for those teachers who had used concept maps as a technique in their classrooms for assessment of performance of their learners.

Validity of the Tool

To establish content validity of the tool, a total of twelve teachers and teacher educators were consulted. The initial draft of tool had four sections, i.e., A, B, C and D: Section A contains questions on teachers' biographic information and Sections B, C and D contains 6, 33 and 2 items respectively. Based on their comments some items were dropped and some were modified. So revised tool contains 5, 30 and 1 items, in Sections B, C and D respectively.

Analysis and Interpretation

The responses under each close-ended question were classified thematically according to their frequency and percentage of occurring. The data are presented in the given tables.

Objective 1

The first objective of the study was to explore teachers' classroom practices regarding use of concept maps. The inputs gathered by survey were consolidated and are presented in Table 2. understanding.

On the basis of teachers' response it was found that, out of 205 teachers, 181 or about 88 per cent were familiar with the use of concept mapping in their day-to-day classroom teaching process. Further analysis of the data revealed found that teachers teaching language discipline were least aware of this technique in comparison to science and social science disciplines teachers. Nearly three-fourth or 74 per cent of teachers indicated that they have got training about the use of concept mapping in teaching-learning situations. Only 38 teachers (18 per cent) had used concept mapping as a tool for unit planning and only half of them were from science discipline. Out of the 40 teachers (20 per cent) who

had used concept mapping as an approach for transacting a lesson, only three of them were teachers from language discipline.

Table 2

Teachers' Classroom Practices Regarding Concept Maps

S.No.	Statement	Respondent Frequency for (Yes)			
		Science Discipline	Social Science Discipline	Language Discipline	Total
1.	Have you heard about the use of concept mapping in the day-to-day classroom teaching process?	70 (90%)	75 (90%)	36 (68%)	181 (88%)
2.	Have you got any training or exposure in either pre-service or in-service related to the use of concept mapping?	65 (83%)	71 (85%)	16 (36%)	152 (74%)
3.	Do you use concept mapping for planning of a theme or planning of classroom instructions?	20 (25%)	15 (18%)	3 (6%)	38 (18%)
4.	Do you use concept mapping as an approach for delivering a lesson?	25 (32%)	12 (14%)	3 (6%)	40 (20%)
5.	Do you use concept map(s) for assessment of learner performance?	9 (11%)	6 (7%)	Nil (0%)	15 (7%)

Out of the total of 205 teachers, only 15 had used concept mapping as an assessment tool and none of them were from a language stream. Thus, very few teachers had used concept maps as an assessment tool. The findings support the study of Reyneke, Meyer and Nel (2010) who indicated that the use of concept map as an alternative assessment tool has been recognised by teachers, but they continue to use it as an instructional tool rather than as an assessment device. By the overall analysis of data shown in Table 2, it may be concluded that teachers of language discipline had very less classroom practices regarding the use of concept mapping as compared to the teachers of Science and Social Science disciplines.

Objective 2

The second objective of the study was to analyse teachers' views on the use of concept maps in planning their classroom practices. Table 3 shows frequency and percentage wise distribution of responses of teachers.

Table 3

Teachers' Views on Concept Maps as a Planning Tool

S.No.	Item Statement	Disagree	Neutral	Agree
1.	Concept map is an excellent tool for unit planning.	3 (1%)	15 (8%)	187 (91%)
2.	Mapping the concepts for a unit or theme may help teachers to identify transactional strategies, assessment techniques, learning activities, etc., that are well integrated, logically sequenced and have continuity.	8 (4%)	32 (15%)	165 (81%)
3.	Concept maps may facilitate a teacher to identify sub-themes, concepts and sub-concepts that they want to emphasise in day-to-day teaching.	11 (5%)	35 (15%)	159 (77%)
4.	The mapping process may help teachers to identify concepts that are linked to more than one discipline, which may facilitate the integration of content.	9 (4%)	28 (13%)	168 (81%)
5.	Concept maps help to understand the relationship between facts and concepts through cross-links, which leads to the development of lesson plans based on constructivist pedagogy.	5 (2%)	27 (13%)	173 (84%)

Table 3 presents frequencies of teachers' responses to statements related to the second objective. Majority (91 per cent) of the teachers indicated that concept map was an excellent tool for unit planning. It shows that the teachers are well aware about the use of concept mapping in unit planning and more than four-fifth or 84 per cent of teachers mentioned that unit planning through concept mapping leads to the development of lesson plans based on constructive approach. Further, more than four-fifths

(81 per cent) of teachers believed that mapping the concepts for units helps in the identification of appropriate teaching-learning and assessment strategies. So it may be concluded that most teachers have a positive view and believe in the use of concept maps as a planning tool.

Objective 3

The third objective was to study teachers' views on the usability, advantages and limitations of concept mapping as an approach for classroom practice. Table 4 presents the distribution of data showing frequency and percentage of responses of teachers.

Table 4

Teachers' Views on Concept Maps as a Teaching-Learning Approach

S.No.	Statement	Disagree	Neutral	Agree
1.	Concept map is an effective teaching-learning approach to develop conceptual understanding.	11 (5%)	19 (9%)	175 (86%)
2.	Concept map facilitates meaningful learning.	21 (10%)	14 (6%)	170 (84%)
3.	Concept maps can prevent rote learning.	27 (13%)	13 (6%)	165 (81%)
4.	Concept mapping teaching strategy helps development of higher level thinking skills in learners.	25 (12%)	17 (8%)	163 (80%)
5.	Concept map is a useful technique to assess prior-knowledge of learners while or before introducing a new topic ortheme.	28 (14%)	23 (11%)	154 (75%)
6.	Concept maps can be used in any content area.	10 (5%)	155 (75%)	40 (19%)
7.	Concept map as a teaching-learning approach is suitable for secondary as well as elementary classes.	21 (10%)	155 (75%)	29 (14%)
8.	Concept maps help learners to make meaningful connections or relationships between/among the main idea and other information.	31 (15%)	11 (5%)	163 (80%)
9.	Concept maps help in brain storming and generate new ideas.	19 (8%)	22 (11%)	164 (80%)

10.	Concept map facilitates the teacher to conceptualise the course or unit content.	31 (15%)	14 (6%)	160 (78%)
11.	Concept maps approach support integrated and holistic style of learning.	19 (9%)	9 (4%)	177 (86%)
12.	Concept mapping is a type of knowledge representation tool or strategy.	35 (17%)	10 (5%)	160 (78%)

Majority of the teachers (84 to 86 per cent) were in agreement that concept map is an effective teaching-learning approach to develop conceptual understanding among learners, support integrated and holistic style of learning and also facilitates meaningful learning. Similarly 165 (81 per cent) teachers indicated that concept maps can prevent or reduce rote learning in learners. So it could be inferred that most teachers have a positive view and believe in the use of concept maps in teaching-learning. .

Data analysis on the other hand pertains to the third objective which portrays that around three-fourth (75 per cent) of teachers possessed a neutral view on concept map as a teaching-learning approach. It further states its suitability for secondary as well as elementary classes at school level and indicated that it can be used within any content area. It may indicate that teachers may not be quite clear or somewhat confused about the usability of concept maps in subject-wise or learners'-age wise teaching-learning processes.

Objective 4

The fourth objective was to analyse teachers' perspective on usability, advantages and limitations of concept maps as an assessment tool. Table 5 presents data distribution of teachers' responses to statements that were generated under the objective.

Table 5

Teachers' Views on Concept Map as an Assessment Tool

S.No.	Statement	Disagree	Neutral	Agree
1.	Concept map is a useful tool for assessing learners' conceptual understanding.	14 (7%)	19 (9%)	170 (83%)
2.	Concept maps could be used in classroom situations as an alternate assessment technique.	11 (5%)	10 (5%)	170 (83%)

3.	Concept map facilitates or helps teachers to assess learners' retention of learned concepts.	22 (11%)	18 (8%)	165 (81%)
4.	Concept map provides a snapshot of learners knowledge and understanding.	21 (10%)	12 (6%)	172 (84%)
5.	Learners would construct different concept maps, even if they want to communicate same knowledge.	10 (5%)	35 (17%)	160 (78%)
6.	Concept maps help the teacher to identify misconceptions in learning of particular discipline in learners.	12 (6%)	13 (6%)	180 (88%)
7.	Concept map is an assessment tool suitable for secondary classes.	25 (12%)	17 (8%)	163 (8%)
8.	Concept map is a useful tool for formative assessment.	22 (11%)	13 (6%)	170 (83%)
9.	Concept map is a useful tool for summative assessment.	165 (81%)	14 (7%)	26 (12%)
10.	Concept map is a useful tool to assist in evaluating end-of-course or terminal or summative assessments, complementing or even replacing the prevailing examination format.	163 (80%)	12 (6%)	30 (14%)
11.	Assessing of learners' performance/learning using concept maps requires thorough preparation.	13 (6%)	17 (8%)	173 (85%)
12.	Concept maps require much more time to interpret and to provide feedback to learners.	17 (8%)	22 (14%)	175 (86%)
13.	Concept maps could be used to evaluate the effectiveness of classroom teaching.	23 (11%)	160 (78%)	22 (11%)

Table 5 presents frequency and percentage wise teachers' responses to statements that were generated from the fourth objective. About 88 per cent teachers indicated that concept maps help them to identify misconceptions in learning of a particular discipline in learners. One hundred and seventy five (175) (86 per cent) of the participants subscribed to the notion that concept

maps require much more time to interpret and provide feedback to learners and 173 (85 per cent) indicated that assessing a concept map requires thorough preparation on the part of a teacher. It further showed that teachers faced difficulty in the assessment of concept maps. One hundred and seventy two (172) (84 per cent) of teachers agreed that the concept map provides a snapshot of learner or learner knowledge and understanding and 165 (81 per cent) indicated that concept map is not a useful tool for summative assessment on one hand and on the other agreed that concept map is a useful tool for formative assessment. It may indicate that teachers think that concept maps are not a perfect tool to assist in evaluating end-of-course or terminal or summative assessments and cannot be used as a substitute for examinations. Though around 78 per cent of teachers showed a neutral view on concept map and mentioned that it could be used to evaluate effectiveness of classroom teaching-learning practices. It further indicates that teachers may not be clear or confused about the usability of concept maps to assess their teaching competency skills.

So it may be inferred that most of the teachers have a positive view and believe in the use of concept maps as an assessment tool for school learners and more so for the secondary classes. However, the responding teachers were strongly opposed to the use of concept maps for assigning final grades in a learning area and reiterated that concept maps are suitable for assessment of learning rather than assessment for learning. Finally, teachers expressed discontentment over the use of concept maps as a possible replacement to the traditional examination pattern; this may be due to their familiarity, acceptance of existing practice and not ready to innovate. It may therefore be concluded that teachers regard concept maps as a valuable tool for formative assessment or summative one.

Objective 5

The fifth objective was to understand the scoring system or criteria adopted by them to assess learners using concept maps. The information collected is then categorised into different areas. A detail of the distribution of data is presented in Table 6.

Table 6

Analysis of Scoring System or Criteria Adopted by Teachers for the Assessment of Concept Maps

S.No.	Statements	Number of respondent frequency)
1.	Measuring the patterns or structure like linear, for linear with branching, Web	8
2.	By counting the number of concepts and sub-concepts	8
3.	Measuring proper use of linking lines and linking verbs	7
4.	Counting the total number and accurate use of preposition	5
5.	Concept map compared with teacher's model concept map	6
6.	Through peer assessment	2
7.	Each learner/learner compares own concept map with their peers/others or concept maps	2
8.	By checklist	1
9.	By rating scale	1

Out of the total of 205 teachers responding to the questionnaire, only 15 teachers had used concept maps as an alternative assessment tool to assess learner's or learners' achievement. The analysis was based on the nature and types of responses of the teachers' on the scoring system or ways adopted by them for the assessment of concept maps constructed by learners. While analysing teachers' response on the scoring system of concept maps it was found that the majority of teachers set some criteria for the assessment of concept maps. Criteria was based on pattern, number of concepts, linking verbs, linking lines, prepositions, etc., of the concept map developed by learners. Out of all the responding teachers only one of them had used peer assessment. One teacher had reported that they developed a checklist and another said that they used a rating scale. None of them developed rubrics or e-rubrics to assess concept maps. So it may be concluded that assessment of concept maps is very subjective, time-consuming and different teachers use different ways to assess concept maps prepared by their learners.

Conclusion

The results of the study revealed that around one third teachers had used concept mapping as an approach for transaction of the their teaching-learning processes but very few of them had used concept mapping as a tool for assessment. Even though mostly teachers had a positive view and believe about the use of concept maps as an assessment tool. Result of the study also revealed that the teachers of language discipline had very less classroom practice regarding the use of concept mapping as compared to the teachers of Science and Social Science disciplines, so specific training is required to make them aware about how concept maps can be used in language teaching-learning process. This reiterates the need to train our present and prospective teachers in this technique. For this, we will have to include concept mapping in the pre-service teacher education curriculum, such as B.Ed., D.El.Ed., inservice training programmes, etc. Seminars, workshops, training programmes may be organised for orienting the teachers in this technique in order to make classroom interaction robust, lively and fruitful. We believe that the usage of concept maps is a must for the educational process, an addition to the classical methods, appealing to the individual character of each student.

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Academic Achievement Gap in Different Mathematical Skills/Abilities of Grade V Students

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Abstract

The aim of the study was to find out the academic achievement gap of Grade V students in different mathematical skills/abilities. Academic achievement gap refers to the gap or difference between academic achievement that should be expected from the students according to their grade position and the academic achievement which is found in their performance based on a mathematical test administered in the study. Different mathematical skills/abilities considered for this study were number concept, addition, subtraction, multiplication, division, geometry, measurement, time, calendar, money and pattern. This study was a part of an experimental research and Grade V students of a school (chosen purposively) were the participants of the study. To find academic achievement gap in different mathematical skills/abilities a test on mathematical skills/abilities was administered. It was found that all the participants have academic achievement gap in measurement and calendar; 96 per cent participants in number concept and multiplication; more than 80 per cent in rest of the mathematical skills/abilities. Surprisingly it was seen that more than 70 per cent of the total participants have not reached Grade I level in 5 mathematical skills/abilities out of the 11 skills/abilities that are assessed. Due to this academic achievement gap, students struggled to learn mathematics as they go to higher grades. Hence,

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there is a need to identify this in the initial stage of school education and bridge the gap as early as possible.

Keywords: *Academic Achievement, Academic Achievement Gap, Mathematical Skill/Ability*

सार

इस अध्ययन का उद्देश्य विभिन्न गणितीय कौशलों/क्षमताओं में कक्षा 5 के छात्रों की शैक्षणिक उपलब्धि के अंतर का पता लगाना है। उपलब्धि अंतराल उस अतंर को संबोधित करता है जो एक कक्षा विशेष के छात्रों से अपेक्षित होता है तथा उस कक्षा विशेष के छात्रों की उपलब्धि होती है। इस अध्ययन में गणित विषय के शैक्षिक उपलब्धि के अंतर को अध्ययन किया गया है। इसमें निम्न गणितीय कौशल/क्षमताओं पर विचार किया गया है— संख्या अवधरणा, जोड़, घटाव, गुणा, भाग, ज्यामिति, माप, समय, कैलेंडर, घन और पैटर्न। यह अध्ययन एक प्रायोगिक शोध का हिस्सा है जिसमें कक्षा 5 के छात्रों ने भाग लिया। विभिन्न गणितीय कौशलों/क्षमताओं में शैक्षणिक उपलब्धि के अंतर को खोजने के लिए गणितीय/क्षमताओं पर एक परीक्षण प्रशासित किया जिसमें सभी प्रतिभागियों की मापन और कैलेंडर में शैक्षणिक उपलब्धि में अंतर पाया गया है। 96% छात्रों की संख्या अवधरणा और गुणन तथा 80% छात्रों की शेष गणितीय कौशल/क्षमताओं में अंतर पाया गया। शोध परिणामों मे यह देखा गया कि मूल्यांकन किए गए 11 कौशलों/क्षमताओं में से कुल प्रतिभागियों में से 70% से अधिक 5 गणितीय कौशल/क्षमताओं में श्रेणी-1 स्तर तक भी नहीं पहुंचे हैं। इस उपलब्धि अंतर के कारण उच्च श्रेणी की कक्षा में पढ़ने वाले छात्रों को गणित सीखने के लिए संघर्ष करना पड़ता है। इसलिए विद्यालयी शिक्षा के प्रारंभिक चरण में इनकी पहचान करने और जल्द से जल्द इस अंतर को कम करने की आवश्यकता है।

Introduction

Elementary stage of education is the foundation for later learning and hence every country wants to strengthen its elementary education. Hence, quality assurance in elementary education is a matter of global concern. Towards achieving this goal, the United States department of Education (2002) initiated NCLB Act, 2001 (No Child Left Behind Act, 2001, as cited in Bhowmick, 2014) and Response to Intervention (RtI) programme in 2009 (Gersten et al., 2009). India has taken steps through different national level agencies like NCERT, RIE, State level agency like SCERT and district level agency like DIET to bring quality to elementary education. Initiatives are taken in the form of legal acts like RTE-2009 (Right to Free and Compulsory Education Act. 2009, Government of India 2009) and Rights of Persons with Disabilities Act (RPwD, 2016, Government of India 2016) to ensure quality of education for every

child in the elementary school. Different committees and policies at national level like NPE 1986 (MHRD 1986), POA 1992 (MHRD 1992) and various documents through NCERT like MLL 1991 (NCERT 1991); NCF 1975 (NCERT 1975), NCF 2000 (NCERT 2000) and NCF 2005 (NCERT 2005); surveys – NAS 2014 (NCERT 2014), NAS 2015 (NCERT 2015), NAS 2017 (NCERT 2017) have reiterated the commitment of the country to quality elementary education in bringing desired learning outcome in all school subjects. But till now the quality in elementary education has remained elusive not only for India but also at the global level (OECD, 2018). One of the reasons for this could be academic achievement gap of the elementary school students in various school subjects.

Academic Achievement

When the term achievement is used in the field of education, it refers to academic achievement. The term academic achievement refers to the degree of success by the students in the curricular areas or the amount of knowledge derived from learning in the classroom. Thus, academic achievement is the end product of all educational efforts (Sangtam, 2014). It is also discussed in the study of Paulpandi and Govindharaj (2017) and (Academic achievement, n.d.) that academic achievement is the outcome of education and is extended to which a student, teacher or institution achieves in their short and long-term educational goals.

Academic Achievement Gap

There are different ways to define achievement gap. Some of these definitions are discussed here. Achievement gap may occur in social, political, economic and education with respect to ethnic group, national level or international level. Bjorklund-Young and Plasman, (2019) defined achievement gap as the percentage of students who do not reach academic proficiency at each grade level. There are several ways to measure academic achievement of a student. But most common ways to measure academic achievement is examination or continuous assessment. There is no general agreement on how it is measured in the best way (Paulpandi and Govindharaj, 2017). As per Alberta Education (2008), students do not need to have mastered all of the learning outcomes at a specific grade level curriculum. So, to find the achievement level of that curriculum, a cut score may be set for acceptable standard on a provincial achievement test (approximately 50 per cent).

Need of the Study

There are so many roles and uses of mathematics in day-to-day life, cultural and moral development, development of living standards, living in modern society (Fatima, n.d), as well as it is inextricably linked to future career opportunities and also take an important role in the level of the students' general learning acquisitions (Khair, Khairani and Elrofai, 2012). So, parents, teachers, school and different educational agencies at district, state and national level are putting maximum effort to reach their educational goal or achievement. But it is seen in various educational surveys and achievement data over the years that students have not reached the expected level of learning achievement in various subjects especially in mathematics (NCERT, 2017). After analysis and review of studies (Gafoor and Kurukkan, 2015; Acharya, 2018; Boruah, 2018) it was found that academic achievement gap in various subjects especially in mathematics, is the main cause behind this fact and the term gained widespread attention after the initiation of the No Child Left Behind Act, (NCLB Act, 2001, cited in Bhowmick, 2014). It should be remembered that, to find the root cause of the above problems, it is not sufficient to find the academic achievement gap in mathematics but also the achievement gap in different mathematical skills/abilities. So, it is felt that there a is need to find the academic achievement gap in different mathematical skills/abilities and here Grade V students are considered because this grade is a bridge between primary stage and upper primary stage leading to the critical secondary stage.

Operational Definition

Academic Achievement Gap

Academic achievement gap refers to the gap or difference between academic achievement which should be expected from the students according to their grade position, that is Grade V and academic achievement which is found in their performance in different mathematical skills/abilities based on a mathematical test administered in the study.

Here, although students' current position is in Grade V, the mathematical test was administered at the beginning of the session. So, all Grade V students' current academic achievement in different mathematical skills are expected to be at Grade IV. If a student's academic achievement was found below the Grade IV in any mathematical skills/abilities, then it is considered

that the student has an academic achievement gap in that skill/ ability.

Mathematical Skills/Abilities

Here mathematical skills/abilities refer to eleven skills in mathematics of Grade V students based on Grade I to Grade IV mathematics curriculum of West Bengal Board of Primary Education. These skills/abilities are number concept, addition, subtraction, multiplication, division, geometry, measurement, time, calendar, money and pattern.

Objective

To identify the academic achievement gaps in different mathematical skills/abilities of Grade V students.

Research Question

Are there any academic achievement gaps in different mathematical skills/abilities of Grade V students?

Method

The present study was a part of an experimental research which is going on in RIE (NCERT), Bhubaneswar under Utkal University, Bhubaneswar, Orissa. The pre-test data of this experimental research was taken to address the above objective or research question.

Participants

All Grade V students (25 students) of a school in West Bengal that was selected through purposive sampling method were the participants of the current study.

Tool or Research Instrument

A Criterion-referenced test in mathematics developed for the study was used for data collection. This tool was developed on eleven mathematical skills/abilities based on Grade I to Grade IV mathematics curriculum of West Bengal Board of Primary Education. These eleven skills/abilities were number concept, addition, subtraction, multiplication, division, geometry, measurement, time, calendar, money and pattern. There are 556 items in the test. Out of these items, 92 items were from number concept, 41 items from addition,49 items from subtraction, 43 items from multiplication, 62 items from division, 60 items from

geometry, 42 items from measurement, 53 items from time, 50 items from calendar, 35 items from money and 29 items from pattern. The items for each skill/ability were collected from the mathematics textbooks of Grade I to Grade IV.

The tool was standardised by establishing the reliability through test-retest method and content validity was checked through a panel of experts. For administration, there is no time limit to complete the test and students can skip items if they are unable to respond. One score is given for right response for each item and thus maximum score possible is 556 and a cut off score (50%) was decided on the basis of MLL (Minimum Level of Learning) (NCERT, 1991), Alberta Education (2008) and a panel of experts' views for achieving a specific grade level in different mathematical skills/ abilities.

Procedure of Data Collection

After obtaining permission from the Head Teacher of the selected school, parent consent was obtained from all the parents of the Grade V students for engaging them in the study. Once the date for the test was fixed in consultation with the subject teacher, participants were given detailed instruction about the test. The test was administered in group under the invigilation of the teacher and the investigator. To avoid copying by participants, the test booklet was divided into four parts of four, three and two skills in each booklet. Care was taken to see that no two students sitting adjacent got the same booklet. Sufficient time was given to the students to complete the test. It took a minimum of four to a maximum of six sessions to complete the test by all the students. After completing the test, the response sheets were collected.

Data Analysis

The response sheets were scored and data were tabulated in the data tabulation sheet. The data tabulation sheet was prepared for each student and each data tabulation sheet contains 11 tables for 11 skills/abilities. The data tabulation sheet was prepared in such a way that all 556 items were entered skills/abilities wise (11 skills/abilities) as well as grade wise (Grade I, II, III, IV). Thus, by a glance at the sheet it is understood clearly, how many responses were correct in skills/abilities wise and grade wise.

The data tabulation sheet of each student was analysed on the basis of cut off marks (50 per cent). If a student obtained greater

or equal to cut off mark of any grade of any mathematical skill/ ability, then it was considered that the student achieved up to this grade in that particular mathematics skill or ability. In this way, skill or ability wise achievements were identified.

(For example, the analysis for one skill is given here— in addition, there are total 41 items. Out of 41 items, 8 items are from Grade I, 8 items from Grade II, 8 items from Grade III and rest 17 items from Grade IV. Suppose in this skill or ability, a student obtains 5 marks (62.5% ≥ 50%) in Grade I, 6 marks (75% ≥ 50%) in Grade II, 0 marks (0% < 50%) in Grade III and also 3 marks (17.65% < 50%) in Grade IV. It is considered that this student achieved up to Grade II in addition and also it is concluded that the current position of this student is Grade IV but actual achievement is Grade II in addition. Hence, the achievement gaps are Grade III and IV for this student).

Analysis and Interpretation

After analysis of the collected data, the results in detail are depicted in Table 1.

Table 1

Actual Grade Position (Achievement) of Grade V Students in different Mathematical Skills/Abilities (Total number of Participants N = 25)

S.No.	Name of the skills/ abilities	Achievement below Grade I		Achievement up to Grade I		Achievement up to Grade II		Achievement up to Grade III		Achievement up to Grade IV		Achievement gap	
		Number of students	*Percentage (%)*	*Number of students*	*Percentage (%)*	*Number of students*	*Percentage (%)*	*Number of students*	*Percentage (%)*	*Number of students (n)*	*Percentage (%)*	*Number of students (N-n)*	*Percentage (%)*
1.	Number Concept	4	16	13	52	3	12	4	16	1	4	24	96
2.	Addition	0	0	3	12	4	16	13	52	5	20	20	80
3.	Subtraction	7	28	9	36	1	4	2	8	6	24	19	76

4.	Multi-plica-tion	18	72	0	0	0	0	6	24	1	4	24	96
5.	Divi-sion	20	80	0	0	0	0	2	8	3	12	22	88
6.	Geom-etry	0	0	0	0	18	72	2	8	5	20	20	80
7.	Mea-sure-ment	12	48	13	52	0	0	0	0	0	0	25	100
8.	Time	18	72	0	0	0	0	4	16	3	12	22	88
9.	Calen-dar	20	80	0	0	2	8	3	12	0	0	25	100
10.	Money	9	36	10	40	0	0	1	4	5	20	20	80
11.	Pat-tern	18	72	5	20	0	0	0	0	2	8	23	92

Table 1 depicts Grade V Mathematics skills/abilities that are divided into 11 skills/abilities and actual achievement of the students in these 11 skills/abilities are divided into five levels as achievement below Grade I, achievement up to Grade I, achievement up to Grade II, achievement up to Grade III and achievement up to Grade IV. Since the test was taken at the beginning of the session, all 25 Grade V students' achievement in the above eleven skills is expected to be at Grade IV. If any student's actual achievement is below the Grade IV in any mathematical skills/abilities, then it is considered that the student has an achievement gap in that skill/ability.

The table presents that all the participants of the study have academic achievement gap in measurement and calendar. Out of the 25 students, one student has no academic achievement gap in number concept and multiplication. Eight per cent students have no academic achievement gap in pattern while 12 per cent students have no academic achievement gap in division and time. 20 per cent students have no academic achievement gap in addition, geometry and money, with 24 per cent students having no academic achievement gap in subtraction.

Major Findings and Discussion

Results, showed that all the students had academic achievement gap in measurement, calendar; 96 per cent students in number

concept, multiplication; 92 per cent in pattern; 88 per cent in division, time concept; 80 per cent in addition, geometry, money concept and 76 per cent in subtraction.

Surprisingly, more than 70 per cent of the total participants did not reach up to Grade I academic achievement level in 5 mathematical skills/abilities out of the 11 skills/abilities assessed.

The findings showed a clear picture that most of the students have academic achievement gap in every mathematics skill/ability assessed in the study. The participants though students of Grade V, their actual academic achievement in different mathematical skills/ abilities were below Grade V. This big academic achievement gap was also observed by NAS (2017) report (NCERT, 2017). As per the report only 54.7 per cent Grade V students of West Bengal had given 0 to 50 per cent correct answers in Mathematics and average achievement of Grade V students of West Bengal in Mathematics was only 48 per cent. As per PISA (2018) findings, there exists huge achievement gap not only in Mathematics but also in language and Science. The results remained unchanged between 2015 and 2018 in PISA survey (OECD, 2018). In ASER (2018) report, it is seen that only 28.1 per cent students of Grade III are able to do at least subtraction and 28.1 per cent students of Grade V are able to do division and these results are unchanged or slightly changed from 2016 to 2018 in overall India. Specifically for West Bengal only 19.4 per cent Grade V students were able to do subtraction but could not do division (Pratham, 2019). The study of Roy, Mitra and Ray (1995 cited in Talukdar, 2013) it was found that only 20 per cent Grade IV students of 15 districts of West Bengal secured minimum expected score. A study of Jalan and Panda (2010) found that average score in Mathematics across the six districts of West Bengal is 27.6 per cent which is below the State-mandated passing percentage of 34 per cent. In a study of Muthukrishnan, Kee and Sidhu (2019), huge achievement gap is reported for the six-year-old pre-school children in addition skills.

Educational Implication

- School functionaries as well as all stakeholders can use this procedure to improve teaching and learning in elementary schools focusing on developing grade appropriate skills in all school subjects.

- Teachers and school administration can look for areas where students do well and use the information to motivate students to improve in areas in which they are deficit.
- The finding of the study is of a school in West Bengal. More or less similar situation may be existing in every State. Taking necessary steps to identify this academic achievement gap in schools would go a long way in helping students overcome this gap and progress in learning.

Conclusion

As a result of the gap of the magnitude identified in the study, students face difficulties in learning Mathematics that in turn lead to develop fear for the subject leading to deterioration in quality of learning. Hence, this alarming situation demands identification of academic achievement gap in different skills/abilities at elementary stage and take necessary steps to bridge the gap before the gap is detrimental.

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Summary of ERIC Projects

Investigating the Root Causes of Underachievement among Gifted Underachievers and Adapting Trifocal Model for Reversing their Underachievement

SUPREET KAUR*

Giftedness has been traditionally associated with intellectual superiority. Gifted students are one group of exceptional learners who are not normally considered at risk for academic failure or problems. It is a harsh reality of today's world that a large number of gifted students do not gain high level of academic success as per their capability. In recent years, underachievement in gifted students is one of the most bewildering educational issues that many parents and educators face. A combination of school, family and personal factors results in underachievement of gifted students. By controlling some of these factors and by creating an appropriate learning environment, gifted students can achieve more. The purpose of this study was to investigate factors responsible for academic underachievement in gifted students. For this purpose, Rimm's Trifocal model was used.

Rimm's Trifocal Model (1995) is one of the most comprehensive approaches to underachievement. The model consists of six steps for reversing underachievement, i.e., assessment of skills, abilities and type of underachievement in a gifted child; communication among parents, teachers and students; changing the expectations of important others; identification of a role model; correction of skill deficiencies and modification of reinforcement at home and school.

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Research Questions

The specific research questions guiding the study were:

- What is the incidence of underachievement in gifted students?
- What factors contribute to underachievement in gifted students?
- Does Trifocal model helps in reversing underachievement among gifted students?

Objectives

The major objectives of the research were:

- To study the incidence of underachievement in gifted students.
- To explore possible factors and combination of factors contributing to each gifted student's pattern of underachievement by taking into account the perspective of students, their parents and teachers.
- To adapt Trifocal model for reversing underachievement among gifted underachievers.

Method

Research Design: A qualitative multi-case study approach was used to address the objectives of the study.

Sample: In the present study, 30 secondary school students were selected from three regions of Punjab, i.e., Doaba, Malwa and Majha by employing multistage random sampling method. Four districts from Malwa region and one district each from Doaba and Majha region were randomly selected. Thereafter, 30 schools were randomly selected from six selected districts that included a selection of five government and private schools from each district.

Tools

The following tools were used in the study.

1. The Advanced Progressive Matrices (APM) by Raven, Raven and Court (1998) was used to measure the intelligence levels of the students.
2. Teacher's nomination form (Parke, 1989) was used to identify gifted students.
3. Factors responsible for students' underachievement were identified through the following assessment tools:

- Social Skills Rating Scale
- Teaching Style Scale
- Leisure Time Activity
- Parental Disciplinary Practices Inventory
- Teacher Effectiveness Scale
- Parental Involvement Scale
- Adolescents Habits Scale
- Guidance Need Inventory
- Parent-Child Relationship Scale
- Home Environment Scale
- Level of Educational Aspiration Test
- Internet Usage Scale

Procedure of Data Collection

Qualitative data were collected employing case study method. An accurate view of causes of underachievement among gifted students was gained with the help of direct student interviews, students' essay, interviews with the teacher, observations and reflections by the teacher and interviews with the parents. A comprehensive assessment of each of the selected students was conducted through standardised tools which in turn, formed the basis to identify different types of underachievers, i.e., dependent conformers, dominant conformers, dependent non-conformers and dominant non-conformers. The details of the four types are given below.

Dependent Conformers: They are sensitive, day dreamers, get frustrated easily and show various tantrums to gain attention of their parents and teachers. They prefer easy tasks and are overprotected by their parents.

Dominant Conformers: These children tend to set unreasonable high goals for themselves and demonstrate enormous discipline in the fields of their choice as long as they are winners. They put down teachers who do not recognise their talents.

Dependent Non-conformers: Typically, they are noticeable as sad and lonely. Their illness and psychosomatic complaints are more frequent which cause them to miss more school. Pediatricians often diagnose them as pressured children.

Dominant Non-conformers: They rarely ask for help and tend to blame their environment (family, school and society) for their

problems. These children establish their identity by opposition. They push limits and refuse to accept no. They feel out of control and depressed unless they dominate other people in their environment. Finally, Rimm's Trifocal Model was administered for reversing underachievement of such gifted students.

Steps for Reversal of Underachievement through Rimms Trifocal Model

Step 1 — Assessment of skills, abilities and types of underachievement: The main purpose of this step is to determine the extent and direction of a child's underachievement through formal and informal methods of assessment.

For interviews: The semi-structured interviews were developed for this study. It consisted of 23 open-ended questions designed to elicit information in six broader areas namely: assessment of skills, abilities and types of underachievement, communication, changing the expectations of important others, role model identification, correcting skill deficiencies and modification of reinforcements at home and school.

Step 2 — Communication: This involves team-work among parents, teachers and students.

Step 3 — Changing the expectations of important others: Significant others such as, parents, teachers, peers and siblings need to change their expectations from children as per their capability. Often, test results and anecdotal information can provide convincing evidence of their abilities.

Step 4 — Role model identification: Children can learn appropriate behaviours more easily if they have effective role models to imitate such as, parents, teachers, siblings, etc.

Step 5 — Correcting skill deficiencies: Poor performance of underachievers in school may occur due to lack of basic educational skills necessary for their further success. Thus, tutoring should be goal-directed and of a specified duration to overcome their skill deficiencies.

Step 6 — Modification of reinforcements at home and school: Modify home and school reinforcements that support under achievement of children.

Data Analysis

It was done by using constant comparative inductive method that included four stages, viz., comparison of incidents applicable to each category; integration of categories and their properties; delimiting the theory and writing the theory. The information from the interviews and documents were first read thoroughly and then were analysed through open coding where all segments were labeled or noted and thereafter, recorded on index cards. By sorting the code notations, categories were emerged by comparing and contrasting notations and relating concepts to experiences and knowledge of the researchers.

Once, the categories were defined and exemplified, these were subdivided into themes for clarity and parsimony, especially, in context of general questions that were guiding the study. Finally, themes were used to generate grounded theory about the dynamics of reversing the underachievement pattern.

Results

Low self confidence, higher expectations, over protectiveness of parents, poor time management and organisational skills, dull and boring classroom environment, inconsistency, work pressure, etc., were a few identified factors that hindered academic performance of gifted students. However, Trifocal model brought significant positive impact on the performance of gifted underachievers. It developed greater self-confidence and decreased their negative feelings. It brought reversal in their underachieving behaviour such as, tendencies of prolonged delay in commencing work. They developed a positive attitude towards school and teachers. They became more organised and improved their social and leadership skills.

Overall, the results of the study indicated a general trend towards improvement in the school performance. In this way, with the help of Trifocal Model, educators can motivate and inspire children to achieve, feel good about themselves and to make contribution in a society in an area that needs their contributions.

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Influence of Teachers' Efficacy, Competence and Motivation on their Instructional Strategy

A Study of Secondary School Teachers of English in Jhunjhunu, Rajasthan

DEVIKA SANGWAN* AND RAJNI SINGH**

The project deals with the secondary school language teachers' characteristics—Competence (CT), Self-Efficacy (SE), Motivation (MT) and their impact on teachers' Instructional Strategy (IS). A teacher plays an instrumental role in imparting and transferring the knowledge and cultivating the ability to use knowledge at an advanced level. Responsible for the learning of the students, true teachers do not merely tell the learners what to do but would give them the knowledge with which the learners could decide what would be best for them to do. Teacher quality refers to all teacher-related characteristics that produce favourable educational outcomes—teacher quality, effectiveness and behaviour. A good teacher should have sound subject knowledge and psychological traits like attitude, motivation, interest, behaviour, etc. Concepts like efficacy, motivation, etc., are parts of emotional and psychological aspects. Many studies have investigated teachers' sense of efficacy, teachers' motivation, and teachers' competence or proficiency. Teacher quality has been consistently identified as the most important school-based factor in student achievement. If teachers

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are exposed to new strategies, it will boost their competency and efficacy, motivate them on their own and eventually benefit their instructional strategy or technique in classroom teaching.

To meet the emerging demands of more sensitive teacher education from the school system, there is a need to prepare teachers for a dual role like encouragement, supportive and humane facilitator in teaching-learning situations that have emerged in the light of changing national development goals and educational priorities. Therefore, the aim of this study was to identify the significance of teachers' Competence (CT) and some of the behavioural aspects like teachers' Self-Efficacy (SE) and Motivation (MT) on their Instructional Strategy (IS) in classroom teaching.

Objectives

The main objectives of the study were:

- To assess the impact of teachers' efficacy, competence and motivation on their instructional strategy.
- To classify and evaluate the factors comprising effective instructional strategy.
- To make recommendations to teachers and administrators to improve the quality of teaching and maximise its benefits.

Research Questions

The study attempted to answer the following questions:

- What is the understanding level of CBSE and BSER teachers' related to IS and its sub-parts?
- What is the understanding (conceptualisation) of teachers related to the concept of SE, CT, MT, and IS in Jhunjhunu district?
- What is the level of teachers' SE, CT, MT?
- Is there any significant relationship among teachers, SE, CT, MT, and IS?
- Do teachers, SE, CT and MT influence their IS?
- Is there any difference between CBSE and BSER teachers' understanding regarding SE, CT, MT and IS?
- How do teachers implement IS while teaching in the classroom?
- How do students perceive about teachers' IS that is adopted in the classroom?

Method

In the present study, both quantitative and qualitative tools and techniques were used to answer the research questions. Ex-post facto research design was adopted in the study by applying a cross-sectional survey method and focus group discussion. Sample population for the study comprised of CBSE and BSER affiliated secondary school teachers and students selected through random sampling from six tehsils of Jhunjhunu district (Rajasthan, India) namely, Jhunjhunu, Chirawa, Buhana, Khetri, Udaipur and Nawalgarh. All six tehsils had approximately 250 schools (private and government) affiliated to BSER and approximately 70 schools (private) affiliated to CBSE. The study used 40 per cent and 50 per cent sample of the target population schools affiliated to BSER and CBSE respectively. For a qualitative study, 70 teachers (30 from BSER and 40 from CBSE) and 62 student respondents were interviewed. Both teacher and student respondents were part of CBSE and BSER. The variables and scales to measure teachers' characteristics (CT, SE, MT and IS) were adopted from a standardised questionnaire. A questionnaire consisted of ordinal scales based on Likert five-point scale. The teachers' interview schedule and students' interview schedule were used to interview both teachers and students. It consisted of 6 and 12 open-ended questions for teachers and students respectively. SPSS and MAXQDA software were used for the analyses. Various statistical techniques like frequency, exploratory factor analysis, T-test and standard multiple regression were used to come up with findings for both quantitative and qualitative analysis.

Results

The major gleanings of the study were the following:

Quantitative Analysis

Teachers' characteristics (CT, SE, MT and IS) were conceptualised in proper detail. Teachers were competent enough in content knowledge such as grammar, phonetics, and literature. Majority of the teachers had an average level of self-efficacy and motivation. Teachers were more extrinsically motivated and no sign of intrinsic motivation was found. It indicates that external desires were driving the language teachers. Exploratory factor analysis revealed that teachers used four aspects of instructional strategy, i.e., presentation strategies, note making/taking, learner focused strategies and question answer strategies to instruct their students

in a class. Overall, it revealed that teachers did try to engage the learners and provided them a platform to bring out the desired learning outcome.

Teachers, SE and MT had a significant relationship with IS whereas CT was not related to IS.

No significant difference was found in the understanding of both BSER and CBSE teacher respondents towards these characteristics. Thus, understanding and perception regarding these characteristics was same for both CBSE and BSER teacher respondents. Both SE and MT predicted teachers' IS which indicated the need for development of SE and MT during teacher training.

Qualitative Analysis

Teachers were aware about the need of self-assessment and being flexible in teaching as per the learner needs. Some teachers conducted tests, quizzes and asked questions for self-assessment after each lesson and kept a teaching note for planning lessons. In contrast, some of the teachers did not ask for feedback or used any other self-assessment methods in the classrooms. As per students' opinion, there were very few teachers who asked for class feedback and tried adapting changes in the next classes.

More than 60 per cent of teachers focused on learning outcomes and explained each concept to the students so that they could develop a better understanding of a topic taught in the classroom. Teachers were well aware of the challenges they faced. For teachers, the challenge was mostly in terms of intelligence. Thus, teachers focused only on content knowledge of learners, which was insufficient. In contrast to the opinion of teachers, students stated teachers used a teacher-centred approach for teaching.

Teachers from CBSE board gave more opportunities to students for speaking in english in a classroom because of the type of students they had. This socio-economic divide between CBSE and BSER schools was visible everywhere across Jhunjhunu. Teachers from BSER stated that, they had no other choice than speaking in bi-lingual.

Only a few teachers (46 per cent) from both BSER and CBSE followed the teacher-centered teaching techniques. Vastness of the curriculum, lack of time or periods for teaching and completing the portions, students' different knowledge levels, etc., were some of the reasons that teachers put forward for teaching traditionally. Most of the teachers (89 per cent) followed learner-centred approaches. Learner-centred activities included practice-based

teaching or learning, learning process, process-oriented approach and motivating students.

Regarding the use of technology, teachers claimed to use ICT lab, laptop, etc., for teaching. Information and Communication Technology (ICT) enabled teachers to catch students' attention and develop their interest in a subject. With respect to IS, teachers claimed to include plays and dramas for teaching the students through act or role-play. In contrast, students shared that they were not allowed to do such things during class except for one or two classes in a year. Teachers felt that they had motivated students by providing them extra knowledge out of the syllabus and conducted quizzes, group discussions, etc., but students in some cases felt that teachers only focused on the content and syllabus more.

Conclusion

The conceptualisation of teachers' characteristics (CT, SE, MT, and IS) would add to the knowledge of teachers' characteristics in the Indian context. Quantitative analysis also revealed significant relationship among these characteristics in terms of SE and MT and had its influence on teachers' IS. A qualitative analysis of teachers and students' interviews also demonstrated their understanding and usage of IS. Thus, there is a need to put more effort into teacher training programmes to enable teachers in bringing out the desired learning outcomes.

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