Voices of Teachers and Teacher Educators

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About the Journal

The journal 'Voices of Teachers and Teacher Educators', an initiative of the Ministry of Human Resource Development (MHRD), is now being co-ordinated by the NCERT. The Journal highlights the vital role of teacher education in India, as the country is poised to provide quality education to all its children, irrespective of gender, caste, creed, religion and geography. The National Curriculum Framework (NCF)-2005, the National Curriculum Framework for Teacher Education (NCFTE)-2009 and the Right of Children to Free and Compulsory Education Act (RTE)-2009 and National Education Policy, 2020 all reflect this commitment and underline the principles that make such an effort necessary and also spell out the strategies for it. The challenge is to augment the role of teachers in shaping the social transformation that India is witnessing, have a long lasting impact on the quality of education, and making education equitable. Teachers and all those concerned with education need to recognize that their ownership and voices are important and that they can and do learn not only from their own experiences but also from each other through collective reflection and analysis. The Journal attempts to lend voice to teachers, teacher educators, researchers, administrators and policy makers in varied institutions such as schools, Cluster Resource Centres (CRCs), Block Resource Centres (BRCs), District Institutes of Education and Training (DIETs), Institutes of Advanced Studies in Education (IASEs), Colleges of Teacher Education (CTEs), State Councils of Educational Research and Training (SCERTs), etc., and make their engagement visible in accomplishing extraordinarily complex and diverse tasks that they are expected to perform. Contributions to the Journal are welcome both in English and Hindi. Voices is an e-Journal and we hope to circulate it widely. We also look forward to suggestions and comments on the articles published. The views expressed and the information given are that of the authors and may not reflect the views of the NCERT.

Call for Contributions

This biannual publication is for all of us: teachers, teacher educators, administrators, researchers and policy makers. It seeks to provide a platform and build a network for our voices, ideas and reflections. To enable this journal to reflect all voices, we must contribute to it in as many ways as we can. We look forward to many contributing with different experiences, questions, suggestions, perspectives as well as critical comments on different aspects of teacher education and schooling. The contributions could be in the form of articles, reports, documents, pictures, cartoons or any other forms of presentation amenable for print. We also seek comments and reflections on the current issue to improve publication and make it a participative endeavour. We must together make this journal truly reflective of our voices. We look forward to receive your contributions for the next issue by 31st October, 2020. We also look forward to your comments and suggestions. The contributions can be sent to the following:

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Contents

Editorial

Covid-19 has caused deep sorrow, anguish and pain to a lot of people. There are millions at the cross roads with no means of livelihood, a sense of anxiety and hopelessness as lockdown not only has taken away their sources of survival but has also closed options to move elsewhere. In this frightening time education has understandably taken a back seat for most of those communities who are not linked to the organised sector. It also seems that many in the organised sector are also hit as they have been summarily discharged. The question of making some education possible for a large number of children is therefore only meaningful in the sense of getting them to engage with something that is interesting and meaningful for them and restores some of the childhood space with activity that is somewhat different from the routine of the home. There is of course a lot that is being attempted with children who have the resources including devices to go on to the web. For the children who do not have the resources these opportunities are non-existent and will remain pending till community support mechanism is evolved with the help of schools or till the school reopens. This of course gives the disadvantaged children very little opportunity to engage with something that is in the nature of school like learning or even organised games with friends. They do not often have resources like books, note-books etc. to continue their learning at home. There is many cases no adult at home who is capable of helping these children cope and out of those homes that may have such a possibility many adults are not interested in doing so. Some organisations including NCERT have developed materials that can be broadcast and are now being aired with ideas and suggestions for children and parents to engage in some interesting tasks. They can no way be considered as replacement for the classrooms and interaction between student and teachers even in the situations where infra-structure is very good.

There are many questions that confront us today both with respect to those children who may have the resources and the atmosphere to engage with online learning but there are far more of those who do not have such resources. The question is what the school means for both these sets of students and what part of education and development of these two categories of children can not be handled by the on line mode. So while we have had a long closure of educational institutions which is likely to be extended further, we need to prepare for schools after the situation becomes better.

We need to think about the challenges the schools are likely to face when they open and the way they can be addressed. There maybe confusions and fears in the mind of children and their parents. There may be prejudices as well adding to the responsibility of the teacher. Then there are safety concerns as well. And while we think of this also brainstorm on what all can be done in the period till the school opens to prepare ourselves and also ensure that children feel encouraged to come to the school and be able to continue to come and stay back in school and in the classrooms.

As soon as we think of the re-opening we have challenges. Some of these that come to mind instantly are: What do we do with respect to for example the break time, the mid-day meal arrangement, the amount of space in the school and the possible of lack of water and sanitizers in many schools? From where the resources needed for this will come. What would happen to classrooms and is there the ability to keep physical distance in most classrooms? What happens to mid-day meal cooking both in the government schools and also the canteen in the rich schools? The challenges for the schools and the children

studying in them maybe very different from each other. We would look forward to well thought of concerns from your experience of the institutions around you. The papers may also be on larger concerns around education and its purposes and what they demand from the policy and administrative initiatives to respond to.

And now we come to this issue of Voices of Teachers and Teacher Education that carries 17 papers from a spectrum of authors. The authors include teachers, teacher educators, academics and research scholars. The papers include studies around schools, papers focussed on teachers educations, on inclusion of all in education and on ICT in education.

The first paper in this issue is "Enrolled, yet Absent Voices from South-West Delhi", is written by **Jayita Mehdi** who is a research scholar. The paper presents the findings of a qualitative research study carried out on students of two South-west Delhi schools. The study done in one boys and one girls school explores the factors that adversely affect student attendance. Taking the sample as the students with less that 75% attendance the researcher has used non-participant observations and other tools to collect data. The author points out that most studies are around drop outs and we need to study the absenteeism factors before it become drop-out. She finds economic difficulties and health difficulties as reasons for absenteeism and suggests that with a more proactive approach school team can reduce absenteeism.

The second paper by **Sathya Narendra** draws attention to the question of English and its impact on the schooling of children from diverse backgrounds. She takes two 'girls only' schools populated by girls of very different background. The title of the paper has the most crucial message of the paper embedded. The title is "Schools and their English: Language as more than a Medium of Instruction". The author argues that just by making government schools English medium the advantage of the elite children would not get reduced. Language is more than a medium and it is language that helps reproduction of the structures already prevalent in the society.

The third paper in the issue is entitled "Arriving at the Right Platform for E-learning" by **Gurumurthy Kasinathan**. The paper discusses the question of platform for e-learning and argues that in order to consider this question in the light of the fact that e-learning would increase as an option. In this situation we have to weigh the options of proprietary and FOSS (Free and Open Source Soft Wares). The paper argues that besides everything else FOSS is advantageous as it offers greater privacy and safety. It is also owned by people and can be freely shared and used collaboratively in any situation. New features can be added to it as per need when using at scale through a technical support and the soft wares and materials in it can be translated in to different languages if needed. The proprietary software platforms collect a lot of information and use it for purposes of their own. The other significant point the paper makes is that while e-learning may be able to partially answer the challenge of teacher development, it can by no means be considered as an alternative for schooling.

The fourth paper by **Seema R. Nambiar** draws attention to the fact that in a holistic conceptualisation of eduction a science classroom can also be used as a means to help imbibe values. The paper entitled, "Imbibing Values through Science Education" focusses on possible learning experiences for integrating cognitive- affective pedagogy in the classroom for the holistic development of the child. It emphasizes the need for an integrated approach of inculcating skills and values through concept analogues, classroom activities and experiments. This will help the teacher and the teacher educators in relating the content areas/activities with the skills and values and implementing the same during the teaching learning process in the classroom.

The fifth paper "Transformative Agenda of Teacher Education: A Case of Delhi University" by **Parminder Kaur** another research scholar. The paper presents the Bl.ED. program of the Delhi university as a program that has in its core a transformation possibility for teacher education. She briefly lays the context in which the program developed and also talks about the key ideas. The paper argues that the course holds a unique identity with its distinct intent, structure and function altogether that cater to the needs of the teacher education system efficiently. The sub themes of the paper unfold the integrity of the professional preparation of teachers in the present times and thus, provide enriched understanding of the educational concern.

The sixth paper by **Seema Shukla Ojha** presents the very important issue of the importance of archeology in history teaching. The paper is entitled "इतिहास में पुरातत्व का महत्व और उपयोग". The paper helps us revisit the idea of history and the importance of sources. The paper also explores how history and archeology are dealt with in different stages of the school in different boards. She finds that there are major differences among these boards with respect to the way history is treated. She suggests that history should look more at the questions like how people lived at different times than anything else and argues that all boards should look at their history curricula.

The seventh paper, entitled Awareness on Disability and Inclusive Education among the Teacher Trainees by **J.B. Dheesha** points out the key role of teachers in making inclusion possible in the classrooms. The paper studies the awareness of prospective pupil teachers on the issue of disability and inclusion using a questionnaire. The author finds very low awareness of this important issue among the respondents and suggests steps need to be taken for this.

The eighth paper by **Kumar Gandharva Mishra** with the title, 'हिन्दी भाषा की कक्षा में 'क्रमविनिमेय' (Commutative) अवधारणा का शिक्षण' is focussed on the commutation possibilities in sentences of Hindi language and linking it to commutation in mathematics. The author points out that it is advised often that mathematics while being taught should be explored in objects around the child. And one such example is sound combination in language. He explores the conjunction of sounds in hindi and points out conjunctions that are commutative and that are not. The paper suggest such explorations across subjects would help enrich the learning of both.

The ninth paper "Functional Vision Training and Visual Efficiency of Students with Low Vision" by **K. Dhanalakshmi** yet again brings out the need for some concrete steps towards inclusion. The author points out that problems with vision can be broadly divided in to two parts and there are many who have low vision. The author points out that these persons can be helped to improve their vision by systematic training but our system does not have these possibilities at the moment.

The tenth paper with the title, "Perception of Creativity among Secondary Level Mathematics Teachers: A Qualitative Analysis" by **Neel Kamal Sharan** is a study on the perception of secondary school mathematics teachers about creativity in mathematics. Based on interview with 20 teachers in equal numbers from the CBSE and the UP board, who were picked through lottery from the universe of the block they were from, the study presents the finding. The study finds a lack of understanding of the term creativity. There seems to be an awareness of the word as all the teachers agreed that creativity is important for teachers and the students. But as to what creativity is they were all at sea. For most of them, creativity in mathematics is only confined to the use of teaching aids, models and giving examples from life. One more thing that emerged from the interviews in the strong need for autonomy. And we can see without autonomy clearly no creativity is possible.

The eleventh paper "Exploring the Models of Designing Blended & Online Learning Courses for Adoption in Regular Teacher Education Course" by **Prabhas Ranjan**, is based on analysis of

secondary sources about different models of teacher education courses. The author considers some blended models of running courses and compares ADDIE, COP and COI models. He analyses these and says that the ADDIE model is pre-determined, linear and in-flexible. He therefore discards it as a possibility and in the analysis of COP and COI says that online collaborative terms make better learning possible and hence these are suitable models. He also says that for students the Community of Inquiry or COI is the most appropriate option for teacher training programs.

The twelfth paper 'भारत में समावेशी शिक्षा की अवधारणा एवं विकास क्रम: विभिन्न नीतियों, दस्तावेज़ों एवं अधिनियमों के आईने में' by **Akhilesh Yadav** is focusses on and analyses the policy provisions on inclusion. The author says that inclusion means learning for all by right and not by charity. It is not just a perspective but a medium for those who want to learn despite all obstacles. He argued that the effort to include all has to be led by the government with reference to make the facilities and places disabled friendly.

The thirteenth paper, 'नई शिक्षा नीति 2019 का प्रस्तावित ड्राफ्ट: स्कूल कॉम्प्लेक्स' (Hindi) by **Kewlanand Kandpal** analyses the way the draft new education policy considers the idea of school complexes as a way to and improve quality of education. The author compares the way the idea of school complexes had been presented in the Kothari commission as far back as in the 1966 with the current proposal. Te author suggests that there are key differences in the way it is approached in the two policy documents. It points out that the 2019 draft makes suggestions like appointment of support staff and counsellors at the school complex level, bringing towards schools to share resources and making the appointment of the head of the school complex merit based.

The fourteenth paper "Integrating non-verbal with verbal for teaching Communication skill" is by a research scholar **Swati Mazta & Sanjay Arora**. The paper focusses on the importance of non verbal communication as a means of learning language. The authors point out that in languages like english that are not commonly used in the environment of the children, we need to use NVC along with verbal communication for primary classes. The paper set in the context of Himachel Pradesh presents some strategies that can be used as NVC for the primary classes.

The fifteenth paper "Looking beyond schools: Analyzing private tuition in schools in the context of West Bengal" authored by **Indrani Sengupta** discusses the way in which private tuitions has a variety of implications and effects on society by taking the case of West Bengal as an example. The paper points out that the percentage of private tuitions is very high in West Bengal, She argues that teachers are involved in tuitions and school gets affected by what happens in tuitions. She points out that this further increases disparity, while it affects besides the school system the family dynamics as well. She says that teachers taking tuitions have alsoled to social unrest among the unemployed youth.

The sixteenth paper by **Sumit Gangwar and Shireesh Pal Singh** entitled 'माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति' presents their research that is focussied on a comparative study of scientific attitude of class ninth students of Pilibhit district of UP. Comparisons are made on the basis of gender, residential background and social class. Certain suggestions are made for the teaching of science on the basis if the analysis of the data.

The seventeenth paper "Role of Information and Communication Technology towards the evolution of Digital India" by **Tripurari Sundari** discusses the role of ICT in educational and economic development. It says that use of ICT is increasing but in India it is not increasing fast enough and suggests some possible challenges to use of ICT in the Indian context.

We look forward to your articles as well as your views on the articles in this paper.

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Enrolled, yet Absent
Voices from South-West Delhi

Abstract

This paper attempts a micro-level understanding of the issue of absenteeism. It is based on a qualitative research study of the factors that adversely affect student attendance. The implications of student absenteeism and the possible ways of addressing the issue are discussed.

Introduction

It was my personal experience as a teacher that led me to realise how grave the issue of student absenteeism is. Absenteeism was a persistent problem that hindered the learning and development of the students not only in my class, but in the entire school. I realised that it was a loop that children could not get out of as it would become their habit to be absent on a regular basis even without reason despite their tremendous potential to do well not only in academics but extracurricular activities as well. In my experience, the children most absent were usually the ones lagging behind the most in academics and were usually also the ones who did not conform to socially acceptable behaviour.[1]

This first-hand, grass-root level experience made me curious about the situations, relationships, mind-sets and values that influence the regularity with which a child attends school. While I had some idea of the factors that result in absenteeism, I undertook primary and secondary research on this issue for a deeper understanding of its multiple aspects.

In section 2 of the paper, I define absenteeism, and lay out the importance of studying it. Section 3 includes the method of study. Section 4 entails the key findings of the study i.e. the reasons behind student absenteeism and the implications of such absence. Section 5 sums up the article with some recommendations to address this issue.

What is Absenteeism?

Absenteeism is absence from school, with or without a valid reason (Akbaşh, Şahin, & Yilmaz, 2017). It is the "temporary cessation of the student, when his presence is expected". The percentage of attendance is the number of days the student attended the school, multiplied by 100 and divided by the number of days the school worked. The percentage of absence is the percentage of attendance subtracted from 100 (Rama, Anitha, & Reddy, 2014).

The term 'absenteeism' must be distinguished from the term 'truancy'. Truancy is when a student deliberately stays away from school without permission.[2]

1 Socially acceptable behaviour is the values and norms individuals are expected to abide by in their everyday life. What is considered socially acceptable may vary across geographical locations and may be determined by culture, religion, caste, or class, for example.

2 'Skipping', 'mitching', 'dodging', 'skiving', 'bunking', 'going missing' are some other terms for truancy (Akbaşh, Şahin, & Yilmaz, 2017).

Absenteeism, on the other hand, may or may not be deliberate. Thus, truancy comes under the umbrella term of absenteeism.

Why Talk About Absenteeism?

Absence from school can become a habit for children if not checked in the early stages. There is, therefore, a direct relationship between prolonged absence and dropping out. Chronically absent children are likely to slip out of the education system.

Recurrent absenteeism is a key forecaster of non-success in school and possibly in higher education too. Better and regular school attendance is linked to higher academic performance of children of all backgrounds (Bonface, 2017).

Reavis and Pierce (1953) note that "(a) child must be physically present in school if he is to derive maximum benefit". Absence is the preliminary step that leads to wastage and stagnation (Rama, Anitha, & Reddy, 2014). It leads to the child being exposed to limited opportunities, both during and after schooling; this results in their potential being untapped and their capabilities being underutilised.

In India, the Right to Education Act, 2009 mandates "free and compulsory education to all children of the age of six to fourteen years." As per Section 8 of the Act, "compulsory education" means to"ensure compulsory admission, attendance and completion of elementary education by every child of the age of six to fourteen years." A child's absence, whether continuous or intermittent, is a sign of attendance being treated as an option instead of as compulsory. Section 24 sub-section (e) of Act requires teachers to "hold regular meetings with parents and guardians and apprise them about the regularity in attendance, ability to learn, progress made in learning and any other relevant information about the child". This clearly shows that regular attendance is a crucial part of the right to education.

There is thus widespread acknowledgment that absenteeism comes in the way of an effective educational experience. If any serious attempt is to be made to address the issue, it is crucial to understand the circumstances in the child's school, home or community, that lead to absenteeism.

The Need for Qualitative Research on Absenteeism

A report by the U.S. Department of Education in 2013-14 defines student absence of 15 or more days in a school year as chronic absence and lays out its causes and remedial measures. India, however, does not yet have a set procedure to identify, track and deal with cases wherein students are absent for even as long as half the academic year, i.e. approximately a 100 days a year. There has been much discussion in India on school dropouts, but not much on absenteeism, in particular, student absenteeism. Thus there is no official document which specifies the minimum percentage of days a student is required to be present in school, barring class 10th and 12th that require minimum 75 percent attendance in an academic year. The highly cited Probe Report (Public Report on Basic Education in India, 1999) mentions teacher absenteeism eight times but it mentions student absenteeism only once. There have been some measures taken to deal with absenteeism such as the Sarva Shiksha Abhiyan, but the rates of absence are still alarmingly high. In India, continuous absence can lead to children being considered drop outs, and their names being struck off the rolls. However, what period of time is considered continuous absence varies from state to state. For instance, in Gujarat, it is 90 continuous days and, in stark contrast, it is 7 continuous days in Karnataka. One must note that sporadic and irregular absence does not lead to striking names off the roles; only continuous absence is considered. Therefore, in Karnataka,absence of even, say, 90 days a year does not lead to termination of admission, as long as it is not continuous. Irregular or sporadic attendance is a major problem that is not recorded or

reflected in official figures (Bhatty, Saraf, & Gupta, 2017).

In a review of the literature, I found that a majority of existing studies focus primarily on school drop-outs, and some only touch upon absenteeism. A few studies that go into absenteeism have predominantly been quantitative studies. To address these gaps in the literature, I undertook a qualitative research study on student absenteeism.

Method of Study

In this section I discuss the location, participants, methodology and tools employed in the study.

Location of the Study

Students from two schools in Mehrauli, Southwest Delhi, participated in the study. One school was as an all-girls school, and the majority of its students reside in Mehrauli. The other school, was an all-boys school. Its students come from Mehrauli as well as Lado Sarai, Saidulajab and other neighbouring areas. Thus, the research was undertaken in the areas of Mehrauli and Lado Sarai in Southwest Delhi.

Sampling

Purposive and convenience sampling were the sampling methods chosen for the study. I had easy access to the schools chosen, and the attendance information of its students, and thus the criteria in choosing the school was convenience sampling. I thought it would be best to understand the issue of absenteeism from those most affected by it, so the students from those two schools, who did not meet the minimum attendance requirement of 75 percent in the previous academic year 2017-18, were narrowed down on. In this way, the other sampling technique was purposive sampling.

Methodology and Tools

The design of the study was qualitative, in order to allow an in-depth study of the causal factors of absenteeism and their effects from the point of view of the core stakeholders. The primary tool used in data collection was the semi-structured and in-depth interview. Three different sets of interview guides were prepared, one each for the students, the parents/guardians, and the teachers. The questions were open-ended, with plenty of scope for the interviewer and interviewee to delve into aspects crucial to absenteeism, its causes, implications, and possible solutions. The study was conducted without any reference to the religion, caste, or birthplace of the interviewees.

Non-participant observation was another tool used to gain deeper insight. I closely observed the homes, schools, communities of the children, the body language, and the routine interactions of all the interviewees, to get the complete picture (beyond what was verbally communicated). Field notes were kept, and any observation or detail thought important for the research was noted down.

Informal unstructured conversation was the third tool. At times,the interviewee and I engaged in discussions. This created an environment where the interviewees added details that they were holding back till then, by making them feel more comfortable and at ease. An environment was created wherein everyone present in the room could give inputs at any point of time resulting in rich insights into their interpersonal relations, daily routine and the general atmosphere of the home.

I conducted a total of 20 interviews. The respondents were a set of ten students in classes 7th and 8th (i.e. upper primary grades), with attendance less than 75 percent in the academic year 2017-18 (as per attendance records), their parents, other family members and teachers from their school.

The interviews were conducted in the months of April and May 2018, outside the

school premises and during non-teaching hours, in order to avoid interruptions in schooling. The interviews were audio-recorded with the consent of the interviewees. The interviews were primarily in Hindi; some interviews were in English, in part. Wherever required, there was a slight deviation from the pre-decided questions, based on the flow of the conversations. Most of the interviews were conducted one-on-one. Wherever possible, two or more family members were interviewed simultaneously for greater understanding of the issue of absenteeism. Transcripts were made translating all the interviews into English, with an attempt to make it as precise as possible. In total, approximately 7 hours and 38 minutes of recording was done.

Findings

The analysis yielded insights into factors that facilitate schooling and factors that discourage schooling. This paper mainly addresses the factors that discourage schooling i.e. the reasons for student absenteeism.

These factors can be at the household- or community-level, school-level, or policy- or system-level. There are also some factors that are individual-specific. These factors are not mutually exclusive but interdependent, as different aspects of a child's world do not exist in isolation from each other.

Factors that Discourage Schooling

Household-level factors include economic instability, illiteracy and pessimistic attitude of parents, and parental indifference towards education and schooling of their child. Illness of the child or a close family member, duty of looking after younger siblings, death of a relative, and so on, may all lead to a child being absent from school. Some children may even have to be absent from school to assist in household work or with the occupation of their parents.

For instance, Sonu's parents passed away a few years ago one after the other. Sonu took up the responsibility of managing his father's shop after his death. Earlier he used to be more regular in going to school. He feels added pressure on himself now. He does not get time off from the shop even if he wants time to study. He does not even get time to play with his friends. In fact, he had to take admission in the school he currently is in because of problems at home after the untimely demise of his parents. He is absent from school when he spends the entire day at the shop, and also on days when he gets late in opening the shop.

Community-level factors include unsafe and violent neighbourhoods, poor hygiene and sanitation levels, prevalent drugs or alcohol abuse and unsupportive social and cultural traditions. During my visits to these communities,[3] I noticed mosquitoes and flies all around the area, which explains the extremely high number of mosquito-related diseases (malaria, dengue and chikungunya) and water-borne diseases (typhoid and cholera) reported from these communities year after year. Health issues are a predominant reason behind the absence of children from school. Most teachers stressed that the good health of children is a prerequisite to their coming to school regularly. A senior teacher, Ms. Richa, noted that there are "*do –chaarbacche*", though not many, in every class who are always unwell and skip school.

School-level factors include poor or inaccessible infrastructure, lack of security in school, unaccountable school leadership, discouraging school environment, monotonous and uninspired teaching style. The school environment which includes

3 Unplanned growth over the years has turned the area into an over-crowded and congested neighbourhood, with approximately two and a half lakh people in Mehraulioccupying a limited land area (Shrangi, 2016).A large number of buildings have economic activity on the ground floor (small shops selling goods or services)and residential housing in the floors above.

the general discipline and order, the infrastructure and facilities available, the level of sanitation and hygiene, the safety and security mechanisms, the attitude of the teachers and the culture of learning deeply affect every child's schooling experience. Their interaction with their friends and peers is also a major component. All these factors determine the regularity with which children wish to attend school.

Rahul has multiple health issues including Autism and Attention-Deficit Hyperactivity Disorder (ADHD). Rahul's parents talked to me about how noise disturbs their child. Noise confuses him, and affectshis concentration. Any disturbance or inconsistency in his environment deeply affects him. Order and discipline helps the child keep calm. If this child acts up in school as a result of noise, his mother, who stays with him throughout the school hours, either steps out of the class with the child or requests the teacher to reduce the noise level.

System-level factors include poor implementation of child labour laws, an education system that encourages rote-learning and an education curriculum that does not take into account the varying abilities and interests of students who come from extremely diverse backgrounds. For instance, Abhay is very interested in dance and goes to a dance academy near his house every day. He prefers his dance class to school. When he had fever recently he did not go to school but still went to the academy. His attendance percentage at school was below 50 percent in the previous academic year. I learnt from another child that Abhay may have passed his 7th class because the school must have given him extra attendance. His mother agrees that because the child focuses on dance classes, his concentration in studies and academics performance suffers. At the instance of a teacher, the mother tried to stop the dance classes; he started crying, promised to go to school every day and requested them to not stop his dance classes. His school attendance has improved since then, though he is still sporadically absent. The mother added that the dance academy teacher is very fond of the children, and celebrates the birthdays of every child in the academy and prepares food for everyone. Once when the mother had not paid the academy fees for two months, the teacher called the child up and told him he will teach him regardless of fee payment; that he should not stop training as he was doing well and would do well in the future. This case suggests that there is a sense of belongingness that the child feels at his dance academy that he does not feel in school. Moreover, the school curriculum does not encourage or add value to the child's interest in dance. In fact, the child is made to feel that he needs to choose between studies and his passion for dance. There is no integration of his passion into academics. Due to this, the child's desire to attend school diminishes.

During my visits to the communities, I realised that most, if not all, school-going boys in Lado Sarai were interested in cricket. Some seemed very passionate about the game. Many children, for instance Aman, not only plays cricket but watches it too (on television sets/mobile phones/ computers). In the evenings, one could see children, mainly boys, swamping the narrow lanes, efficiently using whatever open space available to play cricket. In fact, Anmol skips school sometimes if a cricket match is being shown on television that day. If a test series is going on he chooses any of the five days of matches to be absent. He said that ODIs (One Day International cricket matches) and T20s (Twenty20 cricket matches) are shown only after school timings in the evening so he does not have to skip school to watch those.

Individual-specific factors include lack of friends in school, lack of motivation and interest in studies, lack of adequate sleep, poor health of the child and prolonged illness or injury. Children are discouraged from going to schoolif they are unable to understand the teaching in class or are insufficiently prepared for an exam. Children may not go to school the day they have not done their

homework for fear of being scolded, hit or embarrassed in front of others.

For instance, Bharat has a spine abnormality and as a result, has to miss school they day he has to visit the hospital. Simran who has a blood disorder, does not go to school the day she feels weak or has a headache, especially during summers when it is very hot. As she mentioned during our conversation "If I am sick, it is a very big challenge for me to go to school." Her headaches last for three to four hours when she studies too much.

One factor which appears to be individual-specific, but needs to be systemically addressed for an entire group, is that of children with disabilities. For instance, the case of Rahul has been discussed above under school-level factors. The issue of absenteeism of children with disabilities will be discussed separately.

Implications of Absenteeism

School is seen as a means to a better standard of living, financial stability and independence and education is seen to be directly proportional to obtaining a good job. There can be both short-term and long-term implications of student absenteeism depending on the frequency and duration of the absences. In the short-term, children may be unable to do their homework, understand the chapter being taught in class or may not have the knowledge and skills required to give exams. In the long-run, the children may be under-confident with regard to their knowledge base and may be unable to interact with people unknown to them. It may also adversely impact their employment opportunities and, as a result, their future.

Conclusion

While parents/guardians, teachers and schools play a crucial role in limiting absence of children from school, many other steps need to be undertaken by all the stakeholders involved at multiple levels in order to fully deal with the issue of absenteeism. On the basis of the study it is suggested that the following factors be focused on first and foremost as it is possible to address these immediately by the society as a whole.

Poor health of the children came out to be a common reason behind their absence from school. It also results in the children being lethargic and inattentive while in school resulting in low academic achievements. The most obvious and effective solution to this is better hygiene and sanitation levels in the households, schools and communities of the children. This would lead to greater energy levels and longer attention spans of the children.

Uninspired teaching and learning style was another cause behind the children finding studies boring and monotonous. More often than not, rote learning is encouraged in schools in India. There needs to be greater access to a wider pool of teaching and learning materials by both students and their teachers so that education can be tailored to each child's needs and learning styles. This would lead to a greater interest in studies and, thus, in schooling.

School leadership in schools in India, needs to be more accountable and responsible. This will address the issue of an unproductive and demotivating school environment to a large extent. Not only should there be suitable rules and regulations in place, but regular inspections and school visits should be made by the necessary authorities. This would lead to a school environment that is disciplined and in order.

To sum up, the ability of children to attend school is greatly determined by their school, home and community. Absenteeism, apart from impacting the academic performance of children in schools may be a sign that they might be in need of help. Thus, the sooner it is addressed, the minimal the adverse consequences.

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Schools and Their English: Language as More than a Medium of Instruction

Abstract

I argue that language reiterates the social position of the speaker and tends to reproduce the structures in society. As such, language in school cannot be viewed simply as a medium of communication or instruction. English in India symbolizes one's social class. Today, a common perception is that private schools are the sole providers of good English language education. It produces a hierarchy among students who could and could not get into a private school. In this way, social inequality is perpetuated in society through the education system. However this cannot be overcome by simply changing the medium of instruction in all schools to English.

Introduction

My research is on gender socialisation in two girls-only schools of Kerala: a government school and a girls' school with English as a medium of instruction that has a private management.[1] It is an attempt to understand the experiences of girls in schools of varied social status at the secondary level. The schools are located near each other, and both follow the same syllabus (of the Kerala State Board). I analysed a) how a government school and a private school socialise girls in terms of their gender identity, and b) the girls' experiences of gender socialisation in their schools.

Qualitative research methods were used to get a deeper sense of the girls' schooling and their experiences. For the research, ten girls from the private school and seven girls from the government school were interviewed. A focus group discussion was conducted among seven girls in the government school. Further, one teacher from the girls' school and three teachers from the government school were interviewed. School Observation along with secondary data sources such as school magazines, diary, newspaper reports, school websites, school Facebook page, etc. were used for data collection. The data collection was carried out for two months.

For this paper, I have chiselled out the theme on language and its role in the schooling process. The paper has been divided into two sections. The first section describes the background of the two schools. The second section is on language and schooling. The observations on language made in this paper are not representative of all government schools and private english medium schools. , but rather offered as a perspective gathered while researching gender socialisation in the particular schools. This paper is an attempt to look at language (English) as part of habitus within the specific institutional setting.

Background of the Schools

The private school for Girls is known for its academic and extracurricular activities. The mission of the school is to provide an exceptional all-round education that

1 This paper is based on the research undertaken for my M. Phil dissertation

integrates values. The school engages with societal issues in a humanitarian manner, for instance engaging in activities such as charity, social work, etc. Hence gender here is conceptualized within values of the Kerala society.

During my field visit, I found that the private school is a formal, clean, strict space. The buildings are freshly painted in white. The ground is all cemented and neatly marked. There are flower pots kept aesthetically along the corners. The school buildings are big and very visible. No trees, nothing covers it up. The whole campus is concretised. Therefore, when you enter you are already disciplined. The paths tell you where to walk and where not to. The whole place is super clean. The sister, who is the principal of the school, when she comes out of her room, can get a panoptic view of the school.

The school has a Value Education course for its secondary students. It is part of the curriculum and is geared towards conditioning girls on the values and norms, for instance, how to take care of the elderly, how to endure suffering, etc. It means that the school inculcates feminine qualities of endurance and care among the girls. Students are educated with employable skills, at the same time, taught to be family-oriented.

The government school for girls, was started as a free school for girls. In this school, the profile of the students and said that,

> "Here we have three kinds of students: students whose parents are labourers, students whose parents are employed and do not have time, coming from dysfunctional families, etc. The third kind is the business class."

The diversity of this extent is not seen in the private school that I have visited. While the private school moulds their girls as value oriented, yet modern, active, smart, academically sound waiting to be employed in respectable jobs, the government school prepares its girls for a wide range of career opportunities. Apart from the mainstream courses, work education is given to the girls in the government school as part of the curriculum which trains girls in entrepreneurial courses such as cookery, handicraft, etc. In addition, they have clubs for singing, dancing, painting courses and some of the girls find it as a livelihood option. A teacher commented on work education as,

> "Not everybody can excel in all spheres, for them art, or any other platform will give opportunity to excel...It is not fair on us to push them into something, they should go ahead with what they are good at, in their field. They should find out on their own and succeed in it."

However, Manjrekar warns that such courses for girls are "highly gendered". They only allow girls to enter into low-paying jobs in the unorganised sector (Manjrekar 2003). In both the schools, girls are encouraged to learn skills and values according to their gender role and social life. Both the schools have a different set of school activities with varied goals. However, both schools prepare girls to live and participate in a gender and class stratified society.

Language and Schooling

Education involves the development of capacities across the full range of human practices. However, educational processes are shaped by social structures. Schools are known to reproduce the dominant habitus. Sperry et al. (2015) argues that each word and utterance has the power to represent the speaker's stance, in terms of her gender, age, social status, and emotional state. Thus, language is part of a habitus. Habitus, according to Bourdieu, determines one's actions and thoughts. It 'acts as a matrix of perceptions, appreciations, and actions' thus giving people a 'practical sense' of how to act, which itself embodies a social or class habitus (Bourdieu 1977). Habitus determines interaction of individuals with their society. McDonough describes organisational habitus as that which is "concerned with how the same set of class-based practices, beliefs, and rules not only provide meaning,

but also structure social interaction" (Horvat and Antonio 1999: 320).

The issue in schooling today is that of 'quality' and quality education is perceived variously by different social classes because of which there has been a shift from government to private schooling. English-medium schooling is often equated with 'good education' by low-income parents, this idea is exploited by players in the private sector who are advocating low-cost private schools for the poor (Nambissan 2012). English medium private schools today are symbols of the middle class status. This discourse is created by marginalising and questioning the quality of education in government schools. In tandem, the private educational institutes often claim to have global or international standards.

In that particular girls' school speaking in English is compulsory for all students as well as teachers. Students have to pay a fine if they do not speak in English. On the other hand, the government school does not insist on speaking in English although it is an English medium school. The teachers and students speak in Malayalam. Agnihotri (2010), in his paper, argues that the widening of gap between the rich and poor is maintained and reproduced by having different set of schools with varying degrees of the use of English language. "It is no longer possible to ignore the socio-political matrix in which English functions" (Agnihotri 2010: 5). Further, the language is "acquired as the child's language faculty interacts with processes of socialisation and language becomes inextricably linked with the social, political, gender and power structures of society" (Agnihotri 2010: 6). Vulli (2014) observes that only parents with sound economic capital can afford to send their children to English medium school and the language learning outcome in English medium private schools are better than the government schools. Private schools emulate the culture of the elite and that of the west into the school curriculum. This is why English is being referred to as language of the elite in India (Vulli 2014).

A focus group discussion was conducted among five students in the government school for one hour 15 mins. The purpose was to know about the school rules and norms, curricular and extra curricular activities. The discussion on English language came up when I told them that I had visited the particular private school.

> S1: The Students in that school must have spoken to you in fluent English no? Those students are very arrogant. If we go near them, then they will speak in English.
>
> S3: That is too bad. In their school if they speak in Malayalam then they are punished. In that case our school is better. Here (in government school) we have freedom.
>
> S2: Here also we are asked to speak in English, we rarely do it
>
> Interviewer: But the students of the school approves the use of English, they do not seem to have a problem with it.
>
> S1: They are all rich kids

Although both the schools are English medium schools, there is an assumption that the private school girls can speak fluent English. The discourse that private schools are the better educators of English language still continues although today more and more governments schools are turning to English medium.

Chaise LaDousa, in his paper, analyses the ideologies that envelope the languages and are projected by them. He shows the hierarchy between the languages in terms of class mobility, status, etc. in the context of school system. He argues that "English-medium education derives much of its cachet from its orientation outwards, providing pan-national and international connections and possibilities" while the regional language education gets the community-affirming ethos from the idea of 'mother language' (LaDousa 2014: 42). For those in regional medium education, English-medium

education is cast as a moral opponent. La Dousa argues that the English-medium school indicates a dissatisfaction with the local life and a desire to go elsewhere, and for those in the lower class, the regional language lends a sense of belonging and security (La Dousa 2014). This aspect came through the discussions with the students in the government school. There is a sense of identification with Malayalam and they are skeptical of students who do not know or use their mother tongue. When I asked "Don't you want to speak in English?" One girl replied,

> S3: We do not want to speak in anything by ignoring our mother tongue. Those girls may not know how to read and write in Malayalam properly. I have a friend in the tuition class. She scored good marks in all the subjects but scored poorly in Malayalam.

Conclusion

The primary aim of the school is to transmit knowledge/the curriculum, nevertheless, schools, as theorists have argued, can reproduce class, gender and other inequalities. Today, the common sense is that the private schools are the sole providers of good English Language education. It in a way produces hierarchy among students who could get into an elite private school, and those who could not. In this way, the social inequality is perpetuated in the society by the education system. The difference in schools, often hierarchical, is reproduced through the habitus of the schools such as dressings, language, discipline, activities, etc. Language is not simply a medium of communication or instruction in schools. It is a habitus. It reiterates the social position of the speaker and tends to reproduce the structures in the society. There are many factors that equip one to have English communication skills. Hence it is not enough to only change the medium of instruction to English in government schools if we are to achieve equal standards/ 'quality' in private schools and government schools which is often equated with the proficiency in English. The diversity of students and their needs must be thought through in order to enable all students to learn and empower, to speak, understand and write effortlessly in English and in their mother tongue.

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Arriving at the Right Platform for E-Learning

Abstract

Schools and educational institutions have tended to use proprietary software applications: software that is not sold, but 'licensed', by the vendor. Here, the institution is only a 'user', and neither owns the software nor has any control over it. Over the last decade, however, the Indian public school and higher education systems have made significant strides in using free and open source software (FOSS). Kerala pioneered the adoption of FOSS in schools in 2002 and many states have followed suit. This shift acquired further momentum after the National ICT Policy, 2012 of NCERT, recommended FOSS in schools. In the current COVID-19 pandemic context, e-learning has become the default method at many educational institutions. And with blended and Online learning set to become the new normal, we need to carefully weigh the relative merits of proprietary and FOSS e-learning platforms.
*(**Note:** This article touches upon, but consciously does not delve deep into the larger debate on role of Online learning within education. Its focus is intentionally narrow: in the current context of increased emphasis on Online learning, our technology choices need to be in line with our educational philosophies of teacher empowerment and inclusive education).*

E-learning

The use of e-learning platforms is seeing, and will continue to see, a dramatic increase. While their use was earlier limited to elite institutions, these platforms are gradually becoming mainstream. Every institution, whether in the government or private sector, is either already using e-learning platforms or is likely to adopt them in the future, to facilitate distance education and complement face-to-face interactions between students and teachers. UNESCO estimates that the number of students, across the world, who are unable to attend school, due to lock downs rose from less than 0.3 billion learners on 25 Feb 2020 to 1.38 billion learners in 23 March 2020. Many of them would be candidates for on-line learning programs.

However, while many online learning platforms are available, it is important to choose a platform that aligns best with the principles of education – participating, sharing, and empowering. Just as there is a choice between a proprietary operating system like Microsoft Windows or a Free and Open Source Software (FOSS) operating system like Ubuntu GNU/Linux for desktops, online learning can be conducted either via proprietary software platforms like Zoom and Google G Suite, or FOSS platforms such as Jitsi or BigBlueButton.

FOSS - Free to Share

The use of proprietary software applications, such as Microsoft Windows, requires a licence for each and every system that the software is to be installed on. Any FOSS software, on the other hand, belongs to the institution, and does not need multiple licence payments for use on systems. Thus, a FOSS operating system like GNU/Linux can be freely re-used and shared on several computers without licence fees.

Proprietary cloud applications do not require a licence to be installed on each system; only a browser is needed to access the application. However, cloud-based platforms impose restrictions on the number of concurrent users, or the duration of use, as part of their 'licence to use' agreements. With cloud-based proprietary applications, we continue to be licensed 'users' and not owners. For FOSS platforms, the restrictions are those imposed by hardware capacities and not by licensing constraints. The entire platform can be hosted by the institution on its own or on outsourced hardware.

An institution can freely share a FOSS platform, installed on its server, with other institutions and teachers. For instance, a State Council of Education Research and Training (SCERT) could host these platforms on its own server, and allow teachers and institutions within its jurisdiction to use these to offer their own online learning courses. The National Informatics Centre could offer these platforms to educational institutions across the country, creating a shared public infrastructure. This would be similar to the ERNET program which powered connectivity in public institutions across India, or the NROER / Diksha program which supported open educational resources creation and sharing across India.

FOSS platforms will also reduce the installation/initiation as well as periodic licensing costs, and make it viable for mainstream educational institutions to offer e-learning and blended learning programs. Shared infrastructure for hosting on-line platforms, will further reduce overall costs.

FOSS supports user security and privacy

Proprietary software is a black box with no access available to the source code. Insecurity is inherent in closed code; proprietary applications can never be considered safe. Users have no control over the vendor, no certainty on what kind of user data is being collected by the vendor or how it is being used. This has significant implications for the privacy and autonomy of users. Besides, this data can be used for surveillance and profiling.

This threat is even more significant in the case of education. Lack of information on how the collected data is being used by proprietary platform is a serious challenge to the safety, security and privacy of students and teachers, especially since the data collected can be linked to young vulnerable children. Kasinathan (2020), in 'Making AI Work for Indian Education', argues that software apps/platforms used in schools and educational institutions enable the vendor to collect data on people of, and from a young age, posing a greater risk to their security.

Besides, the privacy policies which govern the collection, use, and sharing of data, are non-negotiable and covered in legalese and technical terms, rendering them ineffectual (Susser, 2019). The potential for misuse of data is extremely high, in the wider context of what has been termed 'surveillance capitalism' (Zuboff, 2015).

An important appeal of FOSS is that the code is in the public domain and hence can be studied by anyone. Linux creator Linus Torvalds said, "A thousand eyes make all bugs shallow". This is not entirely true, software as a human endeavour is inherently susceptible to bugs. So FOSS applications can contain bugs that can compromise users (or be compromised by hackers). Also FOSS by itself cannot ensure security, a user can always visit a site using a FOSS browser or web application, which can contain code that compromises user safety.

While it is not possible to assert that all free software is better than all proprietary software, or vice versa, it is undeniable that as it is possible to 'see' the code in the free software application, *ceteris paribus* it poses lesser danger than closed code. As free software advocates argue, over time, due to peer reviews, free software does become more secure. And if a defect is discovered, we do not have to depend only on the vendor to have it fixed.

The use of FOSS reduces the threat of our data being collected and harvested for political and commercial purposes with or without our knowledge. The data can be collected and stored by the educational institution, and the ownership of this data can lie with the community of institutions, teachers, and learners. Given this, it is an ethical imperative for educational institutions to choose FOSS over proprietary platforms.

The threat is Real

The dangers posed by proprietary e-learning platforms are not notional. It is well-known by now that proprietary e-learning platforms collect data of users, (students and teachers), and this data is harvested by the vendor for commercial use. For instance, Zoom, which is being used by schools and educational institutions for online classes amid the ongoing Covid crisis, has been charged in a US Court for selling the data collected from its users to Facebook, without permission or knowledge of users (Isobel, 2020). The Indian government recently issued an advisory, warning against the use of Zoom, due to the various threats that it poses: surveillance, vulnerability to hacking, and susceptibility to cybercrime (ET Online, 2020). The same concerns can apply to other proprietary platforms as well, including Google G Suite for Education or Byju's. The Cambridge Analytica case illustrates that corporations can also misuse data for nefarious political ends, beyond selling educational products and services.

Since there is no way for teachers, students, and institutions to know what the vendor will do with the data collected, it is essential that the code be made available for public scrutiny. To ensure the safety, security and privacy of students and teachers, only those platforms which have their source code publicly available should be used by schools and educational institutions.

There is also the threat of data being shared with third party private vendors and, thus, becoming prone to further misuse. Recently, the Kerala government was taken to court on the grounds that this health-related data it collected of people in connection with the Covid-19 pandemic and handed over to a US-based firm, Sprinklr could be misused by the firm.

The Kerala High Court, while allowing the state government to utilize the services of the US-based firm, directed it to ensure that the data collected is not misused by the vendor (PTI, 2020) and the state government asserted that it would not allow data to be commercially exploited by Sprinklr. It has subsequently announced that it Sprinklr has deleted all the data in its possession. Thus, the executive and the judiciary have recognized the danger from data held by private parties.

The Opportunity is Real

While Zoom, Google Classroom, and other proprietary e-learning platforms are currently more prominent across the world, there are FOSS alternatives. BigBlueButton (BBB) is an e-learning platform integrated with many Learning Management Systems (LMS) including Moodle and Sakai. Jitsi is another option which can be used for webinars with a large number of participants. Both Jitsi and BBB can be installed on servers of the institution, or on NIC or state data servers.

Kerala has been a pioneer in India in the integration of technology in education. Its IT@schools program is a good example that many states have adapted. Kerala has customized BigBlueButton and integrated it with the Kerala Infrastructure and Technology for Education's (KITE) Open Online Learning management system. Its adoption of BigBlueButton and Moodle FOSS e-learning platforms is likewise worthy of emulation in colleges, schools, and educational institutions across India.

FOSS - ours to enhance and upgrade

Another advantage of using FOSS applications in education is that it is easier to add education specific features in by working with the community that maintains the software. The source code and customization guide are readily available on the website, making it easy for anyone to access and use. A prime example of this - especially relevant in the multilingual Indian context - is the translation of the user interface to local languages, so that a wider pool of users can access and use the software. For instance, IT for Change has translated the user interface of both Moodle and BigBlueButton into Kannada, to make these platforms more accessible to Kannada language teachers and learners. This is not possible with proprietary software as one has to rely on the vendor translating the software and releasing a new version.

The Ministry of Human Resources and Development in India, as well as other state and district level institutions and teachers can also support FOSS communities to further develop and customize these platforms, including local language interface development, to create a free and open enabling environment for e-learning. With the support of active communities of both FOSS developers and teachers, the use of FOSS e-learning software can be made the norm across educational institutions in India.

Caveat

At this point in time, not enough is understood about the virus, to make any prediction at all, about the need or possibilities for school/class level learning. Though over time we may see a need to explore alternatives to large congregations of students in a single site, to smaller, more local (and possibly more heterogeneous student) interactions with a teacher (similar to how many rural schools function today, with small school and class sizes). Again this may be required the medium term and may change if effective vaccine or treatment regimes are established.

While online learning may be useful for teacher education, it would be a disaster, if imagined as 'the solution' for school education. School teachers in many states are being asked, persuaded and informally pressurized into running online classes for their students. This faces the first fatal challenge that learning for young minds, requires physical interactions between teachers and students and amongst students. A second fatal challenge is that access to connectivity is very limited and is extremely iniquitous. A third fatal challenge is that teachers abilities to use this model is limited; there is a danger that "just the act of 'doing something' (would) lull those in roles of responsibility into a false sense of achievement". Education institutions and systems may be content to rely on teachers running WhatsApp 'classes' for few students, accepting this as only possibility in the current context, and avoid exploring other ways of supporting student learning.

Since the lock downs are likely to persist intermittently for several months, online learning will be required to provide opportunities for interactions that can support learning and the focus needs to be on teacher development.

Teacher Development

Given that COVID-19 is likely to be around for quite sometime, the immediate focus therefore needs to be on building teacher capacities to autonomously develop contextual curricula (learning possibilities) for their students. Both now, when schools are shut, as well as when schools reopen, since reopening is likely to be with several and severe stipulations relating to interactions.

The current lock down could be used as an opportunity to look at the possibilities of learning enabled by digital resources

and even re-look at areas of learning itself. The focus can shift to self-directed learning and can modify the role of the teacher in empowering ways.

Curriculum

The way to imagine online learning would be to explore how teachers abilities can be built to develop learning possibilities for children in their own homes, working with their parents and siblings. This has to be **contextual, inclusive and holistic**, to be effective and that would require significant thinking and planning for teacher development. It can offer an opportunity for teacher educators to bring back vision, highlighted in the National Curricular Framework for Teacher Education 'to build a humane and professional teacher'. This also includes discussing COVID-19 and making meaning from different perspectives – the biological (health and hygiene) being one. It also includes discussing the divergent and inequitable impact of the virus on different groups in society, the relative importance of different vocations/professions during the crisis, the macro and micro economic implications, gender implications of the collapse of the personal and professional spheres for many families, collaboration requirements to address a common crisis, need for a universal health system of equitable quality, along with a universal education system of equitable quality.

Again, the current situation would cause an explosion in availability of 'e-content', frameworks of quality, considering context and priorities, become even more critical, to distinguish between one resource and another. Teachers abilities to be able to address these complex curricular needs has to be given the highest priority in online learning.

Given the heterogeneity and inequity in access to connectivity (for both teachers and students), the provision of curricular experiences would need to necessarily be diverse and contextual. Asynchronous learning possibilities with support of digital platforms (creating video lessons that are rich and allow parent – learner interactions) could be one such possibility. There would be several such possibilities beyond the 'zoom conference' or the proprietary app, however it is not the intent of this article to probe these.

Conclusion

If the focus of online learning can be on teacher professional development, it would empower teachers to imagine education as making meaning of contexts and supporting learner abilities to negotiate these. Free Software for free teachers would be a logical conclusion.

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Imbibing Values through Science Education

Abstract

The purpose of education is to nurture and guide the child for life. The author here is focusing on creating learning experiences for integrating cognitive- affective pedagogy in the classroom for the holistic development of the child. This paper emphasizes the need for an integrated approach of inculcating skills and values through concept analogues, classroom activities and experiments. This will help the teacher and the teacher educators in relating the content areas/ activities with the skills and values and implementing the same during the teaching learning process in the classroom. Value inculcation through Science teaching will help the learner to think independently, to reflect and to critically evaluate their own thoughts which in turn will reflect in their behaviour. Moreover, this will enable students to achieve both academic and human excellence to create a vision for a sustainable global society.

Keywords: *Science education, Cognitive, Socio-emotional*

Introduction

Education is not about just passing examination and taking a degree and getting a job. It has to have a holistic perspective to emphasize not only on the cognitive domains but also the affective and psychomotor domains. Jiddu Krishnamurti envisioned that education should emphasize the integral cultivation of the mind and the heart, not mere academic intelligence. *Surely a school is a place where one learns about the totality, the wholeness of life. Academic excellence is absolutely necessary, but a school includes much more than that. It is a place where both the teacher and the taught explore not only the outer world, the world of knowledge, but also their own thinking, their behaviour.»*Children starting school today will enter careers that do not yet exist, will use technology that hasn't been invented yet. Therefore, the purpose of schools is to prepare children for their life. The role of a teacher is not only to impart knowledge on facts and concepts of various subjects but also to educate the totality of mind that cultivates your behavior and the whole being.

The concern for value education has been reflected in policy right from 1952-53. In the National Commission of Secondary Education, Mudaliar Commission, focused on character building and personality development of students. The National Policy on Education (1986) emphasized education as a forceful tool for inculcating values at all stages of school education.

The National Curriculum Framework (NCF 2005) echoed the vision of education for peace as a global concern in cultivating values through school education. Values are inbuilt and hidden in the curriculum and cannot be taught in isolation and therefore their development in children cannot be incorporated as a separate subject. It has to be integrated within the subjects during the teaching learning process. Every teacher needs proper planning for integrating values relevant to the content or the activities

performed in the class and needs to make a conscious attempt for an effective integration in the classroom at all stages of education. As per NCF 2005, the Science curriculum is to be validated at cognitive, content, process, historical, environmental and ethical levels, of which ethical validity has to be also emphasized and implemented effectively. Ethical validity requires that the curriculum promote the values of honesty, objectivity, cooperation, freedom from fear and prejudice and develops in the learner a concern for life and preservation of environment. Moreover, imbibing the same must be one of the main aims of science education. The science process skills form the foundation for scientific methods viz; Observation, Communication, Classification, Measurement, Inference, Prediction. The learning Outcome document developed by NCERT in 2017 also talks about holistic development by giving importance to all the three, cognitive, psychomotor and affective domains of education.

Science being a dynamic expanding body of knowledge offers many opportunities for value inculcation; moral, social, intellectual and personal values. In fact, it can provide new insights into human behaviour. This paper is focusing on certain content areas in Science, both at upper primary and secondary level, where selected scientific terms/ concepts were attempted to be correlated with specific values that share meaningful similarity and thereby attempt made to draw an analogy between them. This paper also emphasises how science process skills are related to different values through an analysis of tasks of performing activities/ experiments at upper primary and secondary level in the classroom. We feel that this will help the teachers in understanding the importance of value inculcation and how to integrate them effectively.

Value Development through Concept Analogues

An analogy is a process of identifying similarities between two concepts. The familiar concept is called the analog and the unfamiliar one the target. Both the analog and the target have features (also called attributes). A concept analogue is a comparison of two ideas which share similar features. Their sharing of similar features can play an important role in value inculcation and will help the students to relate scientific terms with values. This not only fosters the learning process, but also creates an awareness of the importance of values in life and helps in imbibing the same. This can be implemented in the classroom during the teaching learning process; the teacher being the facilitator, can explain the concept and relate it with relevant values simultaneously. Thereby the students will be able to elaborate their thoughts through the cognitive process and construct a relationship between them and assimilate it. Some of the selected concepts at secondary level and the related values are listed in **table 1.1.**

Table 1.1: Concepts and the related values

S. No.	Concepts (Analogue)	Values (target)
1	Solar System; Different phases of the moon; Circulation of blood	Discipline, systematic, regularity and punctuality
2	Circulatory system; Excretory system	Blood/ organ donation, empathy, concern for others
4	Periodic Table	Co-existing, social adjustment
5	Bee keeping	Sharing, division of labour, cooperation and leadership
7	Filtration	We get pure water by filtration, removal of negative thoughts, purity of mind leads to healthy living.
8	Conservation	Conservation of natural resources

S. No.	Concepts (Analogue)	Values (target)
9	Radiation	Spreading positive energy and own potentialities all around which in turn can inspire and help others
10	Intercropping	Living together, socialization, collaborative work.
11	Nucleus of a cell	Nucleus of a cell is acting as a leader, controls and regulates the system
12	Diversity in living organisms	Concern and appreciation for other forms of life, interdependency
13	Natural resources	Environmental sensitivity, protecting and conserving the environment
14	State of matter, covalent bonding	Coordination, sharing
15	Symbiosis	Mutual regard, concern, sharing

Teaching learning of Science gives several opportunities for classroom activities like individual/ group presentations, discussions, use of teaching learning materials, experimental demonstrations and other curricular and co-curricular activities. These activities play an important role not only in developing Science process skills but also inculcate different values among the students. All this has to be pre planned and purposefully incorporated in the lesson of the relevant content areas so that the class is more interactive and participatory. Effective implementation of group activities and practicing self-reflections can develop many personal qualities and creates opportunity for imbibing values **(Fig.1).**

Fig 1: Values associated with group activities

Incorporating Skills and Values through Experiments

Experimental learning in Science can also be an effective platform to implement integrated cognitive-affective pedagogy in the classroom. Science process skills viz. *Observation, communication, classification, measurement and inference* can be related with the different values during the teaching learning process.

Example I: *Acids, bases and salts*

An example to integrate skills and values during classroom transactions can be through the concept of acids, bases and salts from NCERT Class VII Science text book. We will discuss how it may be done here. The key idea is that the adopted strategy must enable the teacher to create a learning situation in the classroom where the student incorporates the process skills and values associated with it, while performing the activity.

Classroom Transaction

Think of different substances like lemon, tamarind, salt, sugar, vinegar, which we use in our day to day life.

a) Make a list of the items with their corresponding taste.
b) Share the items noted and the experience of taste for all the students and analyses with the whole class.

Students try to explore why the tastes are different and what makes them different in nature. Teacher explains that the substances that are sour in taste contain acids and those that are bitter and feel soapy on touching contain bases.

To find out whether a substance is like an acid or base, without tasting let us perform an activity. The students are divided into two groups and each provided with two different items for testing (lemon juice/ detergent or soap solution)

Activity 1: To test / identify the given solution as acid/ base.

Materials Required: Lemon juice, detergent solution, water, plastic cup/ tumbler/ test tube, red and blue litmus paper, dropper.

- Mix some water with lemon juice/ detergent or soap solution in a test tube.
- Put a drop of the above solution on a strip of the red litmus and blue litmus paper with the help of a dropper.
- Is there any change in colour?

The teacher may facilitate the students in testing other items like vinegar, tamarind, curd, grape juice, lime water, ant sting, window cleaner, soap, etc; as an extended activity and classify them as an acid or a base in a table. The teacher may now initiate a discussion in the classroom on the difference in the colour observed and also on the intensity of colour change.

S. No.	Test Solution	Effect on Red litmus paper	Effect on Blue litmus paper	Inference
1.	Lemon juice	Remains red	Turns red	Acid
2.	Soap solution	Turns blue	Remains blue	Base
3.	……	……..	……..	…….

Skills: Observation, communication, classification, inference.

Values: *Patience, concern, respect, empathy, integrity, self confidence.*

Skill and Value Integration

Observation of colour change while testing different items during the activity is one of the Science process skills. Skill of observation requires one or more senses and needs patience and the habit of waiting. This practice of making students wait for different kinds of observation is the best practice to develop the value of patience. Patience being an important life skill (emotional skill) helps the students in managing stress, emotions and resisting peer pressure. The concept of patience is the ability to endure different circumstances, and as a value it reflects the state of one's body and mind.

Discussions based on the observations made by the students will create a situation that would aid the development of the skill of communication. By expressing their ideas, listening and responding to others, accepting feedback, etc. students would understand how to hold discussions. Moreover, the teacher himself/ herself can set an example as an effective communicator not only through speaking and writing, but also by exhibiting qualities like friendliness, respect, confidence, empathy, etc; and also being an active listener. Thereby students will be able to imbibe the value of caring and respect through discussions and group work. Respectful listening will not only make them understand the words, but also to understand the emotions behind. Hence the skill of communication plays an important role in developing values like respect, concern and empathy, important moral aspects of character.

Classification is done by the students based on the observations and the discussions in the classroom. The colour changes obtained on the litmus paper while testing different items will help the students in reasoning, sorting and classifying the solutions into the two groups, acids and bases. Classification

is done based on certain reasons which students really see and feel by which they trust and believe in the scientific concept or fact. Hence grouping, sorting, classifying materials based on evident scientific reasons develop the value of trust, honesty and integrity, an important moral character.

Inference, drawing conclusions is based on the learning experience gained by the students by which students accept the ideas and make logical connections. Students thereby go through the process of establishing something in exact, the quality of being determined, which in turn develops the value of self confidence and self determination, an important performance character.

Example II: Meristematic tissues

An investigatory activity for transacting the concept of meristem from NCERT Class IX Science text book has been discussed here with an integrative approach of cognitive-affective pedagogy.

Classroom Transaction

Teacher asks the students about vegetative propagation and discusses various examples like potato, carrot, onion, etc; with the questions how do they grow? Which type of cells/ tissues in the plant grows in the same way? Teacher divides the class into six groups and asks each group to bring a few onion bulbs and perform the activity by involving them.

Activity 2: To study the role of root meristem.

Materials Required: onion bulb, turmeric powder, two beakers/ glass jars, water, glass tumbler.

- Take three glass jars, 1, 2 & 3 and fill them with water till the rim.
- Add a pinch of turmeric powder (1gm) in jar 3
- Place one onion bulb in each jar, with the root portion slightly touching the water
- Observe and measure the length of the roots of the bulbs for a few days.
- On day five, cut the root tips of the onion in the second jar by 1 cm. Now observe the root growth in both the jars for the next two days.

Ask the students to observe the growth in length in all the three jars for about a week, record and tabulate the same (Fig. 2, a, b, c)

a b c

Fig 2: Onion Root tips; a, control in water, b (day 4) & c (day 9), control and experimental group

Table: 1.2

S. No.	COGNITIVE DOMAIN (questions for discussion)	AFFECTIVE DOMAIN	
		SKILLS	VALUES (performance and moral characters)
1	What is the rate of growth of the root tips in the different jars?	Observation	Patience
2	Speaking about and discussing the difference between observation in jar 1, 2 & 3? What was observed when the bulbs were grown in turmeric solution? Discussion on the factors necessary for root growth.	Communication	Concern, Respect, Empathy
3	Measure and tabulate the root growth in the control and the experimental group.	Measurement	Integrity
4	Compare the growth of root tips in the control and the experimental group. What will happen if the water is not changed daily?	Classification	Justice
6	What are the conditions to be provided/ needed for the experimental set up and why? What can you conclude from the experiment as per the observations done? Discuss the effectiveness and application of the activity.	Inference	Work ethics, Self responsibility, Self confidence
8	What is the reason behind the depression of root growth in the turmeric solution? How does the root respond to other solutions?	Prediction	Creativity

The teacher here has upgraded the activity to higher cognitive levels to create inquisitiveness and interest among the students by asking them to find the difference in growth of the roots when the onion bulbs are kept in water (control group) and in turmeric solution (experimental group) and measure the length of the root for a week and record the observations by measuring the length of the roots Fig. 2 b. The above is not only a low cost activity which can be performed in the classroom by the students, but also has significant inferences. The experiment reveals that turmeric inhibits/ depresses cell division in onion root meristem cell. In addition, it can implicate anti-cancer activity by reducing the percentage of cell division. We can say this because growth is slower. Through other experiments we see in the solutions of turmeric the presence of a phenolic compound, curcumin. The above experiment is an example to demonstrate the integration of cognitive-affective pedagogy in the classroom for skills and values. A routine and regular practice of the same in the classroom can bring out remarkable changes in the mindset of children through the inculcation of skills and values.

Conclusion

Values and skills can be inculcated through concept analogues, experimental learning and other activities through Science Education during the teaching learning process. This approach will help the teachers in maintaining discipline in the classroom as rather than imposition it is the concept of self-discipline among the children that will be developed. This approach of cognitive-affective integrative pedagogy and a planned regular practice of the same will strengthen the student teacher relationship. This is necessary to build up a stress free learning atmosphere in the classroom. Hence, there is a strong relationship between scientific process skills, individual values and beliefs and personal development. The skills, values and beliefs we embrace affect our behavior

and, furthermore, the way we act impacts on our personal development and socio-economic performance of the society we live in.

Therefore, there is a strong need for an integrated approach of inculcating values and skills in the classroom by the teachers and teacher educators. This will help the learner to think independently, to reflect on and to critically evaluate their own thoughts. Through classroom activities the students will gain experiences to internalize the values which will in turn reflect in their behaviour and actions. Moreover, this will facilitate the students to achieve both academic and human excellence to create a vision for a sustainable global society.

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Transformative Agenda of Teacher Education: A Case of Delhi University

Abstract

Teachers possess a highly significant position in the educational sphere and therefore no education system can be aloof from these significant stakeholders in order to realize its envisioned goals. Considering the symbiotic relationship between education and the teacher education sphere, the Indian education system has continuously reformed and reflected on its intent in order to cater to the demands of the society through an array of educational policies and plans marking a long history since the pre-independence era till the present times. If the teachers possess such an indispensable role, so does their education holds immense vitality. This paper is an attempt to recognize and reflect on the practical undertaking of one of the promising teacher education course in Delhi University. It also responds to the dire need of professional preparation of teachers at the very preliminary stage and therefore meet the rising demands of the budding professionals in the education arena.

This descriptive type qualitative paper presents a case of one such pre-service teacher education course, B.El.Ed. (Bachelors in Elementary Education) presently transacted in Delhi University that re-conceptualized the overall scenario of nation's teacher education with its onset. The course holds a unique identity with its distinct intent, structure and function altogether that cater to the needs of the teacher education system efficiently. For better assimilation of the topic the paper is well dissected into various subheads that provides an actual essence of the topic and discuss the case of B.El.Ed. in particular. The sub themes of the paper unfolds the integrity of the professional preparation of teachers in the present times and thus, provides enriched understanding of the educational concern. The rich exposure and experiences of the participants of the research i.e. teacher educators, course leaners and course graduates lends enough plausible insights about the course.

Introduction

It can be well internalized that *Education* has always captured an honored place around the globe. Being at the highest priority it has continued to evolve, diversify and expand its reach to maintain its sanctity in each nation. With considerable attention, the Indian society has equally realized, recognized and reformed its educational system through an array of educational policies and plans marking a long history with significant milestones since the pre independence era till the present times catering the requisite needs of the nation. It is quite evident that the education system of any society sheds considerable attention to one of its most important stakeholders i.e. the teachers in order to realize its envisioned goals more efficiently. They are perceived as indispensable assets of the educational sphere possessing requisite roles and responsibilities to act and react with greater rigour accelerating the overall educational quality (Delor Report, 1996). The intelligible expression "No system can rise above the status of its teacher" in the Education Commission 1964-66 definitely acknowledge the notable existence of the teacher who holds requisite competencies to transform

the educational and the social world. This discourse on educational quality throw more impetus on preparation as a teacher that involves comprehensive training experiences with both pre and in-service, needs to be more promising in order to transform the overall picturesque of the educational world. Also, in order to serve the thirst of knowledge of the learners, the teachers are required to evolve through continual learning processes and grow professionally to further cater the quest of the ever- evolving educational world.

The Milieu

Teacher education of any nation holds vital importance in the educational sphere that must address the world of teaching-learning more peculiarly than merely dealing with duties, responsibilities and classroom assignments. Though such vision is well articulated in the educational policy documents and reports, but is still far from realization in order to achieve the expected endeavors. An array of researches at various levels depicts the suffrages in Indian education system that attacks the teacher education arena with similar tensions. The observable sites of teacher education programs depicts a different scenario where these lament the inadequacy, inefficiency & ineffectiveness etc. The Yashpal Committee Report (1993) on Learning without Burden noted "inadequate programs of teacher preparation lead to unsatisfactory quality of learning in schools. Though at the policy level many impressive reformations have been witnessed in the teacher education, but the implementation level still faces some contradictions that have always plagued the quality of teacher education of the country. Mere change in teacher education curriculum does not guarantee its successful implementation, rather reorientation of all the stakeholders is needed. There is an urgent need to respond to the challenges of teacher preparation programs and calls for realistic and empirically established model of teacher preparation to enable them to develop the required skills, abilities and attitudes among teachers. The anxieties are still persistent in the teacher education world and thus remained unanswered that strongly questions the professional preparation of teachers through array of programs in the country. The teacher preparation programs must considerably throw impetus on the realities of the classrooms which they often overlook and must be evolved from time to time. The system of continuous professional renewal is needed in teacher education arena in order to address the ongoing malfunctioning in the system (Mishra, 2013). Thus, the present study majorly bent towards the pre-service orientations because it is considered as a stepping stone in the professional career of any teacher that decides the future journey of the teacher. The course represents a strong affirmation that distinct preparation of teachers can definitely alter and trigger the requisite changes in the system (Kumar, 2001). The course stands apart from the existing teacher education courses that are quite incompetent and do not confidently deals the realities of the social world. The curriculum and the structural arrangement of the B.El.Ed. course definitely makes a fair attempt to answer the persisting issues of teacher education realm in the country. To understand its nuances that serve the purpose to provide effective and efficient pre service training to the future elementary teachers will help to provide plausible insights of change in the system.

Transformative Agenda of Teacher Education

The long and evolving educational history of the nation dictates that the teacher education has always been the priority for all the stakeholders. The transformations in the educational world has definitely initiated similar alterations in the teacher education sphere too. With much widened view and intent, the teacher education of the present era definitely becomes more responsive to the emerging demands of the school system. The

teacher education program of 21st century aims to prepare teachers to serve the dual role (NCERT, 2005). The first is to prepare extremely encouraging, supportive and sensitive teachers who facilitate the learners to recognise and realise their potentialities and utilise them all to be an active citizen. Secondly, being an active stakeholder, teachers must make conscious effort and contribute to educational sphere through requisite curriculum renewal processes and indulge in educational discourse of 21st century. Such expectation from a teacher of a modern world definitely calls for their requisite professional preparation and development through promising teacher education programs.

The role of teacher education becomes *transformative* in its stance as it holds the power to transform the shape of the educational world effectively. The larger expectation from a teacher in the current times must be fulfilled by the more assuring teacher education programs that must understand and answer the dynamics of the system and society as well. These program must capture the sociological, political, psychological and economical context and comply with the educational aims. Recognising the diversity in the Indian classroom, the present teacher education program must also cater to all such significant aspects into its realm. If such a novel understanding is adopted by the present teacher education programs, they will be able to successfully cater to the needs of the system. The preparation of teachers must involve them to develop requisite understandings of the social, cultural and political contexts of the learners, create conducive environment for learnings, acknowledge reflective teaching-learning process and respond to the social and educational realities of the world. Such an aptitude of teachers will help them to refine their appropriate competencies and create consciousness to address the aims of the education. The ample opportunities of active engagement, learning, reflection and assimilation would definitely help in enhancement of professional skills of the teachers. Such a revolutionary change in the teacher education sphere will definitely boost its process and practices widening its horizons. Thus a widened vision of teacher education (Facione. 1985) definitely prepare the teachers better and enhance professionalism among them, eroding all the exiting anxieties from the past practices and infusing the new and more empowering processes in the teacher education domain. An innovative treatment to the teacher education program, the role of teachers definitely is altered from a 'meek dictator' to a 'transformer' (UNICEF, 2000). The idea of lateral learning, context shaping of teachers, including local cultural context of the community, molding teaching practice and management and administration of the school system definitely raise the role and responsibilities of the teachers that invoke the desired change in the educational arena. The involvement of teachers in the educational and social research definitely open new avenues for the teachers that arouse requisite sensitivity and sensibility among them. The teacher education of the present world which has witnessed a paradigm shift from teaching to learning that enables the teachers to reform in their routine practices of teaching and thus, enhance the scope of learning while teaching (Linek. 2003).

Vedika (2016) also states that teacher education plays a significant role in requisite educational and national developments. It is through the effective teacher education programs that the destiny of the classrooms can be changed by making both the teachers and students enable to transact desired roles and responsibilities as per the pace of the 21st century. The nations' expectations are fulfilled only through sound teacher preparation and development. The polishing of teaching, pedagogical, practical and research skills of the teachers will definitely cater to the diverse needs of Indian classrooms. As the country has reached at the gateway of the development that welcomed the new technologies and possibilities

that has reformed the exiting classroom practices. The teacher remain the only active stakeholder at classroom level, with desired potential and preparedness propose change in the lamenting stories of the classroom and the nation to a promising one. Their encouraging, supportive and sensitive aura in the classroom ensures the development of the self and student's potentialities to the fullest addressing the educational priorities effectively and efficiently. Even Bhatt (2013), discusses that the demand of the professional teacher in the school sphere can only be well satisfied through professional preparation of teachers. The optimistic approach of teacher preparation programs must involve awareness and development of content knowledge, methodology, self-awareness, critical thinking, effective communication and decision making among the student-teachers that enable them to respond to the educational queries effectively and efficiently. The new role of these teacher preparation programs has definitely witness various significant shifts from teaching to learning, passive to active instruction, teacher to learner centred and teacher as dictator to facilitator. There is a clear indication that the teacher education bears a great responsibility in bringing the revolution in the education world. It holds immense possibilities to initiate changes in the existing practices and accommodate new understandings that comply with the needs and demands of the present century.

B.El.Ed (Bachelors in Elementary Education): A Case of Delhi University

The Genesis

The Bachelor of Elementary Education i.e. B.El.Ed. Program, a four-year integrated professional degree program of Elementary Teacher Education offered currently functional at the eight colleges of the Delhi University. The program holds a unique identity with its distinct intent, structure and function altogether that cater to the needs of the education system efficiently. It is a bilingual program, which was conceptualized by the Maulana Azad Centre for Elementary and Social Education (MACESE) of the Department of Education, University of Delhi and launched in the academic year 1994-95. The program was an attempt towards fulfilling the needs of the professionally qualified elementary school teachers in the country. It was designed to integrate the study of subject knowledge, human development, and pedagogical knowledge and communication skills and address the present needs of the educational sphere (Handbook of Elementary Education, CIE, University of Delhi). The introduction of the B.El.Ed program in undergraduate colleges of the University of Delhi was one of the hysterical move towards creation of a cadre of Elementary Education professionals – a long awaited promise, that begun with the conception of the Central Institute of Education in 1947. For the very first time, it also upgraded the professional status of the elementary school teacher by providing them a university degree for elementary education. The evolution of this promising program rests on the belief that the requisite quality of elementary teacher education can bring much desired changes in the overall educational scenario. Therefore, it became the grass root attempt to rejuvenate, transform and establish an essential bond between the school and the larger educational sphere. Beholding such reflective temperament, teachers were envisioned as active stakeholders who can yield a desired transformation in the school educational sphere.

Why B.El.Ed.?

Considering the wide spectrum of teacher education in the country that exists with distinct and overlapping courses of various intent, structure and design. There are few courses that have kept an edge over whole lot of teacher education courses. One such among them is the promising running

course B.El.Ed. in the widest educational spectrum of Delhi University. The clear representation of genesis of the course in the above section definitely ignites the curiosity about the relevance existence of the course in the teacher educational realm. This course with distinct vision and mission have definitely brought a wave of transformation in the arena of the teacher education in the country. Even Krishna Kumar (2011) expressed that evolution of such promising teacher training course successfully marked the wave of curriculum reform in India. "*This four year training program mixes elaborate exposure to school and community life with a sustained study of theory*". The program is a great blend of various sociological, political, psychological, economical and pedagogical perspectives that widen the scope of teacher education in the country. It propounds to initiate radical reformation in the education and social world by raising the standards of the elementary school teacher who is professionally more sound, and aware to address the needs of the system (Kumar, 2001). A new image of an elementary school teacher is envisioned and also created with this pace setting teacher education course. A teacher with much informed role and responsibilities, crucial social status, evidences of critical consciousness, alternative pedagogical strategies, supportive, sensitive and creative enough to bridge the existing gaps is the intended vision of this progressive teacher education course (Sadgopal, 2001). Even the one of the renowned educationist who have soiled her hands in the course evolution and execution Poonam Batra (2013) states that the Bachelor of Elementary Education (B.El.Ed) as program is one of the pioneer step towards curriculum reform in Delhi university that brought a wave of transition in the teacher preparation in the country. This indispensable effort by the University of Delhi to start such path-breaking four year integrated interdisciplinary undergraduate program proved to be an asset in the pre-service teacher education arena. Latika Gupta (2008) in her autobiographical account "Making of a Teacher" discusses her experience and exposure of the course that definitely is an eye-opener. She states that the "B.El.Ed turned out to be the biggest catalyst in my search for an aim and direction in life".

Raina (2016), discusses the promising nature of the B.El.Ed program that brought significations in the elementary educational sphere. It highlights the process based model of the program that engages the future teachers in integrated disciplinary domains during all the four year of the program. Krishna (2011) recognizes the B.El. Ed program as significant development in the teacher education sphere, acknowledges that this program in particular holds unique quality that helps the trainees to grasp intricacies of the educational world and thus cater to the diverse of the Indian classrooms which is lacked in various traditional teacher training courses. Sadgopal (2001) asserted that this four year integrated professional degree program for preparing elementary school teachers in Delhi University is a path setting one in the history of Indian education. It brought a wave of critical change to react and reflect on the issues of teaching and learning in its best possible ways. Batra (2001) exclaimed that the evolution of the course treated the multi facet needs of the educational world. The traditional role of the teacher was altered with widened vision integrating the subject knowledge with practical underpinnings.

The aura of the course was felt and filtered down to the roots of the vast expanse of the teacher education world in the country. Thus, the clear articulation of the ideas above definitely projects the bright presence that holds the potential to erode the existing anxieties related to the teacher education arena in the country.

Voices From The Field: (Reflections From Teacher Educators, Student Teachers & Course Graduates)

This section of the paper comprises of the significant voices of the various stakeholders who have directly experienced the flavors, but each with distinct purview of the course. As a part of empirical research study, it involved perceptions of the teacher educators, the student teachers and the graduates from one of the colleges of Delhi University offering B.El.Ed. course. The total sample of 40 approximately in the ratio of 2:1:1 i.e. student teachers, course graduates, teacher educators respectively was taken into account through purposive sampling technique in order to view, understand and soak the actual essence of the course. It further facilitated the understanding about the ongoing practices and the procedures of the course that influence professional preparation of the future elementary teachers. The data was gathered through a set of structured questionnaire and the response scale in order to cater to the significant responses of all the involved stakeholders.

- About the course: B.El.Ed is a landmark in the history of teacher education that bears the strength to revive the overall educational health in the society. The course is quite innovative in its vision, mission, practices and procedures, that successfully caters to the professional demand of elementary school teachers in the present scenario, and was confirmed by all respondents. The course definitely stands out distinctively as compared to other courses of elementary teacher education in the country, it provides a complete training package of educational theories and practices to the future teachers. All of them confirm that the course provides unique amalgamation of educational theory and practices.
- Educational Exposure: There are various innovations in the course setting a strong base through self-development workshops, field visits, art and craft exposure, educational seminars and talks by experts, rigorous four-year training definitely adds innovations to the course. The educational exposure that the course offers is quite enriching and captivating for the learners to view and internalize the intricacies of the educational world through an array of activities, assignments, project works and workshops held during the course work.
- Institutional Collaborations: The course promotes institutional collaborations with various organizations at various levels. The alliances among university and schools, various departments within college and between various colleges definitely project the diversified network that the course extends.
- Research & Development: The course also provides immense scope of research and development to the students by indulging and engaging them into present educational discourses. The student teachers had to pursue educational research topic of their interests as a mandatory part of the curriculum in the final year. Also, opportunities to involve in research work during all four years is quite enriching for the students.
- Pedagogical Paradigm: The pedagogical strategies adopted during the course work are quite constructive in nature. The practice of constructivist strategies has enhanced scope of debates and discussions and catering to individual differences has added vitality to the course.
- Future Prospects: The future prospects of the course are quite promising that opens avenues of education and employment to its students after successful completion of the course. They can teach in different schools, can be teacher educators and interns in various educational organizations and NGOs. Also, the avenues of higher education are further exposed where the course graduates can pursue diverse PG level courses in varied discipline such as in education, elemen-

tary education, psychology and languages, etc. from various state, central or recognized universities.

Existing Gaps

Alike any course, this course has some of the lacunas that somewhere fades the actual essence of the course. These lacunas were brought into limelight by the respondents and are discussed in length. They clearly stated that the course do possess some gaps that somewhere reduces the overall vitality of the course. Also, it was acknowledged that there is overhaul in the course that needs to be immediately checked in order to realize the potential aims of the course.

Curriculum Up-gradation: All the respondents recognized and thus acknowledged that the curriculum of the course needs up-gradation from time to time in order to meet the educational needs of the present times. The worries related to curriculum persisted among the student teachers also. It portrays the absence of dynamicity in the course curriculum which could not keep pace with the ever changing educational needs of the country.

Liberal Courses: It was also confirmed by all the respondents that the treatment to certain liberal courses offered during the course period was very weak thus needs immediate revamp. They depicted that despite the innovations, the course still lags in providing sound exposure to the specific liberal options, which are only treated at the superficial level. The course doesn't provide in-depth knowledge and exposure to these liberal courses that hinders student teachers understandings of these courses. The liberal courses also lack requisite content and exposure to the students. Less scope to pursue the masters in particular subject is the major drawback of the course. It was stated that "more rigorous efforts in various areas is important and need to be addressed". These gaps need to be addressed effectively and efficiently in order to better accomplish its envisioned objectives.

Time Concerns: The structural arrangement of the course as understood is quite extensive and therefore definitely hold some time concerns too. The paucity of the time is definitely felt while transacting wide range of the academic and non-academic activities both by the teachers and the students. The respondents expressed that they definitely feel the shortage of the time in order to meaningfully conduct the activities as per the need of the course. They express a wide range of the activities that definitely demand ample time which the course doesn't offer and they have to face inconvenience and miss the deadlines at times. The course graduates also expressed on similar lines.

Work Pressure: This aspect is something that can be witness in any organizational setup. When enquired from the teachers and the students both about the work pressure the opinion gathered projected some real concerns. Teachers lamented that they were often over occupied with their jobs leading to chaos at times whereas students also shared their stories of excess workload of assignments, projects, lesson planning and reflections of each educational activity done by them. Sincere completion of assignments and meeting deadlines often cause worries to students as they are unable to pay requisite attention and prepare their core subjects for examinations.

Lack of Student Forum: This restricts the student teachers to discuss and assimilate their ideas. No such forum to deliberate on the students' opinions that adds more efficiency in functioning of the course restricts the course to improve. Without such conferring of ideas and opinions the existence of the course becomes very mundane where there is no or less scope of significant inputs from the stakeholders.

Others: The access and availability to the resources is quite restrictive sometimes. The concern of "heavy expenses are drained during the internship period" that considerably ignores the needs of the students from economically weaker sections of society. The students are excessively

burdened during the internship days coping with school and college responsibilities and commitments. All the respondents of the course also highlighted reasonable and similar concerns that somewhere comprise the issues related to quality of the course. Also, it was highlighted that the course stresses more on the lesson planning and less on the actual classroom procedures.

Reforms: Paving the Way

In order to address the above mentioned concerns highlighted by all the three sets of respondents, there were suggestions by them to increase the efficiency of the course. They highlighted certain significant measures that are essential to bring the reformation in the overall functioning of the course. It was suggested by the respondents that the overhaul in the course curriculum needs be addressed urgently. They proposed that to improve the efficiency of the course, more stress on the use of information & technology should be encouraged in the course transaction which is somewhere faded in the course work. If more attention and time is given to the elementary level teaching and its requisite preparation, the objectives of the course will be more efficiently addressed. The involvement of teacher educators must be in requisite research work, rejuvenation of pedagogical strategies and evolution of students forum were certain concerns need urgent attention of the course planners and administrators. The depicted reforms definitely ensured better utilization of the present resources and functioning of the course as well. Considering these, the overall effectiveness of the course can be surely increased thus ensuring better accomplishment of the course goals.

Conclusion

The above discourse with strong theoretical and practical underpinnings present in the education realm definitely points the vitality of the transformative essence of teacher education. The education of teachers if tackled with requisite attention and intention can surely treat the ailing system by strengthening the quality of teachers who hold the responsibility of quality education thus catering to the needs of the curious learners and the anxious system effectively. Promising course like B.El.Ed must capture the stakeholders' eye and similar innovations must be initiated to conform the needs of the system as well. If handled with utmost attention and sincere efforts the courses like these that adhere to promising professional preparation of teachers surely bring a wave of transformation in the teacher education realm in the country. The vitality of such courses must be acknowledged by all the involved stakeholders and thus improve the actual essence of the teacher education arena.

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इतिहास में पुरातत्व का महत्व और उपयोग

इतिहास अतीत की घटनाओं, गतिविधियों, स्थितियों और प्रक्रियाओं का एक रिकॉर्ड है। एक विषय के रूप में, यह न केवल यह समझने में छात्रों की मदद करता है कि वे कौन हैं और कहां से आए हैं, बल्कि यह उन्हें वर्तमान मुद्दों और भविष्य के बारे में सोच-समझकर निर्णय लेने का अवसर भी प्रदान करता है। इसके साथ ही इतिहास ज़िम्मेदारी पूर्ण नागरिकता सिखाने के साथ ही विद्यार्थियों में कई तरह के कौशल का भी विकास करता है। इतिहासकारों का मानना है कि इतिहास का अध्ययन एक व्यक्ति को मानवीय अनुभव की सार्वभौमिकता के साथ-साथ उन विशिष्टताओं के प्रति भी संवेदनशील बनाता है जो संस्कृतियों और समाजों को एक दूसरे से अलग करते हैं (डेनियल, 1981; वॉस, 1998)। सामाजिक विज्ञान के एक विषय के रूप में, इतिहास, इस प्रकार, प्राथमिक और द्वितीयक दोनों स्रोतों के आधार पर इतिहासकारों द्वारा तैयार किए गए मानव अनुभवों के बहुपक्षीय विवरणों का लेखा जोखा है।

यह सभी मानते हैं कि वास्तविक साक्ष्य/प्राथमिक स्रोत का उपयोग इतिहास-शिक्षण का एक महत्वपूर्ण मानदंड है। दुनिया के कई हिस्सों की कक्षाओं में पहले से ही स्कूल में पाठ्यपुस्तकों का उपयोग करने के बजाय प्राथमिक और द्वितीयक दोनों स्रोतों का उपयोग करने पर ज़ोर दिया जाने लगा है। इसने इतिहास शिक्षण को अधिक उपयोगी और आनंदमय बना दिया है। पुरातात्विक अवशेष एक महत्वपूर्ण प्राथमिक स्रोत हैं। लोगों के अतीत को समझने के लिए पुरातात्विक साक्ष्यों का उपयोग शिक्षार्थियों के मानसिक क्षितिज को व्यापक बनाता है और उन्हें विभिन्न जीवनशैलियों की वैधता और व्यवहार्यता से परिचित कराता है (फेडोराक, 1994, पृष्ठ 26)। पुरातात्विक अवशेष न केवल कुलीन लोगों के जीवन पर प्रकाश डालते हैं, बल्कि आम लोगों की कहानियों और उनके दैनिक कारनामों को भी प्रस्तुत करते हैं।

आज यह देखा जा रहा है कि ऐतिहासिक विरासतें लुप्तप्राय हो रही हैं। लोगों द्वारा कई बार जानबूझकर अथवा कई बार लापरवाही से संग्रह करने के कारण ऐतिहासिक स्थल अलग-अलग तरीकों से नष्ट हो रहे हैं । अधिकांश लोग इस बात से अनभिज्ञ हैं कि किसी ऐतिहासिक स्थल की सतह पर मिला एक बर्तन का टुकड़ा भी ऐतिहासिक दृष्टि से बहुत महत्वपूर्ण हो सकता है। हो सकता है कि यह टुकड़ा उस स्थान पर रहने वाले लोगों के बारे में जानकारी का एकमात्र साक्ष्य हो। ऐसे में यदि लापरवाही से साक्ष्य को एकत्र किया गया तो उसमें निहित ऐतिहासिक ज्ञान हमेशा के लिए खो सकता है। यह एक सामान्य समझ की बात है कि जब अधिक से अधिक लोग पुरातत्वविदों और उनके काम के बारे में 'जागरूक' होंगे, तो वे अधिक से अधिक सांस्कृतिक विरासत के प्रति सराहनीय रवैया रखेंगें, और इस तरह हम अधिक से अधिक स्मारकों और पुरातात्विक स्थलों और वस्तुओं को विनाश या लूट से बचा पाएंगे। पीटर स्टोन ने ठीक ही कहा है कि, ''भौतिक विरासत का दुरुपयोग पूरी तरह से कानून द्वारा नहीं रोका जा सकता है, यह काम केवल शिक्षा के माध्यम से आम जनता के जागरूकता के स्तर को बढ़ाकर ही किया जा सकता है। आज की जनता पर सबसे महत्वपूर्ण प्रभाव डालने वाले उनके बच्चे हैं, जो कल की आम जनता का निर्माण करेंगें ''(कॉर्बिशले, 2011, पृ. 84-85)।

इतिहास की कक्षाओं में पुरातत्व का महत्व और उपयोग

युवा छात्र अक्सर समय और इतिहास की अवधारणाओं को समझने में कठिनाई का सामना करते हैं। फेडोरक ने एडम (1994,पृ. 26) को उद्धृत करते हुए लिखा है जो यह प्रस्तावित करते हैं कि इस तरह की समस्या से निपटने के लिए अतीत में लोग कब रहते थे से ज़्यादा ज़ोर इस बात पर देना होगा कि अतीत में लोग कैसे रहते थे। भौतिक सामग्री या पुरातात्विक अवशेषों का उपयोग छात्रों को ठोस सबूत देता है जो उन्हें समय की अवधारणा (फेडोरक में किस्कोक द्वारा, 1994, पृ.26) को समझने में मदद करता है। पुरातात्विक साक्ष्य छात्रों को बदलाव की अवधारणा को समझने के लिए भी आदर्श माना जाता है क्योंकि अतीत की उन कलाकृतियों को देखने से उनमें समय के साथ जो परिवर्तन दिखता है उससे छात्रों के लिए यह समझना आसान हो जाता है कि समय के साथ परिवर्तन कैसे होते हैं (वही, पृ.26) हेंसन, बोडले और हेवर्थ (2006, पृ.36) का कहना है कि "पुरातात्विक साक्ष्य का उपयोग करते हुए इतिहास पढ़ाने से स्कूलों में इतिहास के कई सकारात्मक शैक्षिक लाभ दिखते हैं। पुरातत्व एक अनुभव आधारित विषय है। कलाकृतियों और स्मारकों की जांच करने से छात्रों को अतीत की भौतिक सामग्री से

ऐसा जुड़ाव हो जाता है जिसे आसानी से अकेले दस्तावेज़ों के ज़रिये नहीं पाया जा सकता है।"

कक्षा में पुरातत्व के उपयोग पर कई प्रकाशित शोध हैं। 2003 में, लेवस्तिक, हेंडरसन और शाल्ब ने अपने लेख 'डिगिंग फॉर क्लूज: एन आर्कियोलॉजिकल एक्सप्लोरेशन ऑफ़ हिस्टोरिकल कॉग्निशन' में छात्रों के सीखने पर पुरातात्विक शिक्षा के प्रभावों की जांच की है। उनका निष्कर्ष था कि पुरातत्व शिक्षा इकाइयां इतिहास और पुरातत्व को सीखने में योगदान करने के साथ ही पुरातात्विक नैतिकता के प्रति सम्मान व्यक्त करने में भी योगदान देती हैं। 2003 में डॉ मैरी डर्बिश ने अपनी कक्षा में छात्रों पर पुरातात्विक इकाइयों के प्रभावों की जांच की। उनके शोध के परिणामों में पुरातत्व के लिए एक बढ़ी हुई जानकारी और प्रशंसा मिली, लेकिन पुरातात्विक नैतिकता के बारे में छात्र जागरूकता या चिंता में थोड़ी ही वृद्धि देखने को मिली (डर्बिश 2003, पृ. 108)। सोसाइटी फ़ॉर अमेरिकन आर्कियोलॉजी (SAA) ने अपने अध्ययन में 'आर्कियोलॉजी के बारे में सार्वजनिक धारणाओं और दृष्टिकोणों के बारे में' शीर्षक से एक पुस्तिका निकाली। इस पुस्तिका के निष्कर्ष में कहा गया है कि "पुरातत्व और पुरातत्वविदों के बारे में अमेरिकी जनता का ज्ञान न तो ठोस है और न ही स्पष्ट है और इसके साथ ही इस अध्ययन क्षेत्र को लेकर कई बार उनमें ग़लत धारणाएं भी हैं" (रामोस और डुगानेन 2000, पृ. 30)। इस तरह के अध्ययनों से संकेत मिलता है कि प्रारंभिक पुरातत्व शिक्षा की कितनी आवश्यकता है। SAA ने कहा कि "पुरातत्व छात्रों को अवलोकन, व्याख्या, निष्कर्ष निकलने की क्षमता, अनुमान, और वर्गीकरण जैसे महत्वपूर्ण कौशल का उपयोग करने और विकसित करने का अवसर प्रदान करता है। यह गणित (जैसे ग्रिड के साथ काम करना), विज्ञान (जैसे, स्तरविज्ञान का अध्ययन करना), भाषा कला (जैसे नोट्स लेना), और कला (जैसे, वस्तुओं का चित्र बनाना) में छात्रों के कौशल को भी बढ़ाता है " (सोसाइटी फॉर अमेरिकन आर्कियोलॉजी, 1995, पृ.1)।

मैट ग्लेंडिनिंग (2005) ने अपने लेख 'डिगिंग इन टू हिस्ट्री: ऑथेंटिक लर्निंग थ्रू आर्किओलोजी 'में यह निष्कर्ष निकाला कि पुरातत्व, इतिहास-सहयोगात्मक, बहुआयामी, अनुभवात्मक, मज़े दार और अतीत को पढ़ने का सबसे प्रभावशाली तरीका है। पुरातात्विक और ऐतिहासिक साक्ष्यों का उपयोग अब इतिहास के शिक्षकों द्वारा कई देशों में अपने विषय को पढ़ाने के तरीके में प्रमुखता से शामिल है। कई देशों में कई पुरातात्विक संगठन और संग्रहालय शिक्षकों को पुरातत्व और स्कूलों में सीखने के साक्ष्य को अध्ययन में शामिल करने के लिए प्रोत्साहित करने के लिए काम कर रहे हैं (कॉर्बिशले, 2011, पृ. 83-84, 94)। कई स्थानों पर शिक्षकों के लिए कई तरह की कार्यशालाओं का आयोजन किया जा रहा है, जैसे उटाह में आयोजित 'आर्किओलोजी, एथिक्स एंड कैरेक्टर ' कार्यशाला जिसके द्वारा पुरातत्व को कक्षा का महत्वपूर्ण हिस्सा बनाने का प्रयास किया गया (मो एट अल 2002, पृ.112)। शोध से पता चलता है कि पठन-पाठन में इमारतों और स्थानीय स्थानों का उपयोग करने के प्रति काफ़ी जागरूकता और उत्साह दिखता है और यह भी कि इस तरह के शिक्षण से अंतर्विषयी कार्य के भरपूर अवसर मिलते हैं (कॉर्बिशले, 2011, पृ. 9)। कई विश्वविद्यालय भी पुरातत्व विज्ञान में शिक्षक पाठ्यक्रम प्रदान कर रहे हैं।

भारतीय स्कूल पाठ्यक्रम के ढांचे में पुरातत्व

भारत में स्कूली शिक्षा से संबंधित व्यापक दिशा-निर्देश केन्द्र सरकार द्वारा तैयार किए जाते हैं। इन दिशा निर्देशों को राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद (NCERT) द्वारा पाठ्यक्रम के ढांचे के रूप में और विस्तार दिया जाता है। अब तक एनसीईआरटी द्वारा चार पाठ्यचर्या की रूपरेखाएं तैयार की गई हैं। ये रूपरेखाएं सांस्कृतिक विरासत के संदर्भ में पुरातत्व पर बात करती है (जिसमें पुरातत्व और जीवित विरासत दोनों शामिल हैं)। पाठ्यक्रम की सिफ़ारिशों को आगे विभिन्न चरणों में पाठ्यक्रम और पाठ्य पुस्तकों के माध्यम से पेश किया जाता है।

भारत में परिषद द्वारा तैयार किए गए पाठ्यक्रम और पाठ्यपुस्तकों को आमतौर पर राज्यों और अन्य स्कूल प्रबंधनों द्वारा ज्यों का त्यों अथवा कुछ स्थानीय सुधारों के साथ अपनाया जाता है, हालांकि, शिक्षा समवर्ती सूची के अंतर्गत आती है, इसलिए कई राज्य अपना स्वयं का पाठ्यक्रम और पाठ्यपुस्तकें भी तैयार करते हैं।

परिषद में पाठ्यपुस्तकों के निर्माण की शुरुआत से ही, पुरातात्विक साक्ष्यों को इतिहास के पाठ्यक्रम में एकीकृत तरीके से प्रस्तुत किया जाता रहा है। 2005 से पहले, इतिहास की पाठ्यपुस्तकों में विभिन्न लोगों के जीवन और गतिविधियों का वर्णन करने वाली सामग्री के साथ ही उनके द्वारा बनाई गई वस्तुओं, पुरास्थलों और नक्शों की तस्वीरें और चित्र शामिल थे। लेकिन इस तरह के चित्र बहुत कम थे और ये सबूत के रूप में कम सजावट के उद्देश्य से अधिक उपयोग में लाये गए थे। इतिहास की पाठ्यपुस्तकों में साक्ष्यों के इस्तेमाल हेतु बहुत लम्बा इंतज़ार पड़ा। 2005 में सर्वप्रथम पाठ्यपुस्तकों में तरह-तरह के लिखित तथा चित्र साक्ष्यों का प्रयोग किया गया जहाँ सभी चित्रों के साथ विस्तृत टिप्पणियां, तरह-तरह की गतिविधियाँ, प्रश्न तथा पुरातात्विक और अन्य ऐतिहासिक साक्ष्यों पर चर्चाएं शामिल की गई थीं।

भारत में स्कूली शिक्षा में 2005 में नए राष्ट्रीय पाठ्यचर्या की रूपरेखा (NCF, 2005) की शुरुआत के साथ महत्वपूर्ण बदलाव आए जिसने बाल-केंद्रित शिक्षा के लिए अवसर प्रदान करने पर ज़ो र दिया; गतिविधि-आधारित सीखने को बढ़ावा देने की बात की। NCF 2005 के बाद तैयार इतिहास का पाठ्यक्रम वास्तव में पिछले पाठ्यक्रमों से काफी अलग है। इतिहास की पाठ्यपुस्तकें अब साक्ष्य आधारित इतिहास प्रस्तुत करती हैं। पाठ्यपुस्तकों में साक्ष्य को अक्सर लेखकों द्वारा 'स्रोतों या चित्रों' के रूप में उल्लिखित किया गया है और अब छात्रों के सामने विविध प्रकार के दस्तावेज़ों, उद्धरणों और इमारतों और वस्तुओं की तस्वीरों को प्रस्तुत कर उन्हें पूछताछ के द्वारा अपने

स्वयं के निष्कर्ष तक पहुंचने के लिए प्रोत्साहित किया जाता है। विस्तृत टिप्पणियों के साथ तस्वीरें और चित्र, योजनाएं और कलाकारों के छापे जैसे पुरातात्विक और ऐतिहासिक साक्ष्यों का उपयोग, अब इतिहास की पाठ्यपुस्तकों का एक अभिन्न अंग है। अब इतिहास की पाठ्यपुस्तकों में चित्रण के लिए एक अलग तरह का दृष्टिकोण अपनाया गया है। वे अब केवल पाठ की एकरसता को नहीं तोड़ते हैं या पुस्तक को अधिक आकर्षक बनाने का प्रयास नहीं करते हैं। अब छात्रों को केवल इतिहास का ज्ञान प्राप्त करने के लिए नहीं बल्कि विविध साक्ष्यों के ज़रिये इतिहास को करके सीखने के लिए प्रोत्साहित किया जा रहा है। उन्हें प्राथमिक और द्वितीयक दोनों स्रोतों को देखकर मानव अतीत के बारे में सीखना है, जैसाकि इतिहासकार अतीत की कहानी-इतिहास के बारे में बताते समय करते हैं।

इसलिए पुरातात्विक साक्ष्य बहुत शुरुआत से ही इतिहास के पाठ्यक्रम का हिस्सा थे, लेकिन पहले इन्हें इस तरह से दिया गया था कि शिक्षक ख़ुद अक्सर नहीं जानते थे कि यह पाठ्यक्रम में दिया गया था जिसे उन्हें पढ़ाने की आवश्यकता थी। NCF 2005 के बाद इतिहास की पाठ्यपुस्तकों की जो एक नई विशेषता हम सबके सामने आई, वह इतिहास के विद्यार्थियों का उन स्रोतों से परिचय है, जो छात्रों को उनका अध्ययन करने, उन पर सोचने और स्वयं निष्कर्ष तक पहुंचने के लिए प्रोत्साहित करते हैं।

अध्ययन की आवश्यकता और औचित्य

आज पूरी दुनिया के पुरातत्वविद पुरातत्व विज्ञान के बारे में छात्रों और जनता के साथ जानकारी साझा करने का प्रयास कर रहे हैं ताकि पुरातात्विक संसाधनों की रक्षा और पहचान में उनका समर्थन प्राप्त किया जा सके। अतः यह समझना ज़रूरी है कि इन महत्वपूर्ण मुद्दों के बारे में हमारे विद्यार्थियों के विचार और अनुभव क्या हैं। विभिन्न शिक्षक प्रशिक्षण कार्यक्रमों में और छात्रों के साथ बातचीत में यह पता चला है कि छात्र पुरातत्व के बारे में बहुत उत्सुक हैं लेकिन अध्ययन के इस क्षेत्र बारे में उनके पास पर्याप्त जानकारी नहीं है। भारत में छात्रों की ऐतिहासिक सोच पर पुरातत्व के उपयोग और प्रभाव की जांच करने वाले शोध नहीं मिलते हैं। हालांकि सामान्य रूप से इतिहास शिक्षण की जांच के लिए कुछ प्रयास किए गए हैं। रैना (1992) ने राजस्थान में इतिहास शिक्षण का एक सर्वेक्षण किया। दहिया (1994) ने माध्यमिक छात्रों को प्राचीन और मध्यकालीन इतिहास पढ़ाने में पुरातत्व के महत्व पर हरियाणा और दिल्ली में सीबीएसई से संबद्ध स्कूलों के शिक्षकों का एक सर्वेक्षण किया। सामाजिक विज्ञान शिक्षा विभाग (एन सी ई आर टी, 2004) ने सामाजिक विज्ञान, भाषा और वाणिज्य की पाठ्य पुस्तकों का मूल्यांकन अध्ययन किया, लेकिन कहीं भी पुरातत्व के बारे में विविध बोर्डों की पाठ्यपुस्तकों में उपलब्ध जानकारी का विश्लेषण यह जानने के लिए नहीं किया गया कि अमुक सामग्री छात्रों के ऐतिहासिक ज्ञान पर क्या प्रभाव डालती है अथवा उन्हें सांस्कृतिक विरासत के प्रति संवेदनशील बनाती है या नहीं।

शोध प्रश्न

अध्ययन निम्नलिखित सवालों के जवाब देने का प्रयास करता है:

1. क्या विभिन्न बोर्डों का इतिहास पाठ्यक्रम और पाठ्यपुस्तकें पुरातत्व के बारे में छात्रों की समझ विकसित करती हैं।
2. क्या विभिन्न बोर्डों का इतिहास पाठ्यक्रम और पाठ्यपुस्तकें सांस्कृतिक विरासत के संरक्षण के प्रति संवेदनशीलता को बढ़ावा देती हैं।

पाठ्यक्रम और पाठ्यपुस्तकों की समीक्षा

अध्ययन के लिए केंद्रीय माध्यमिक शिक्षा बोर्ड (CBSE)*, भारतीय स्कूल प्रमाण पत्र परीक्षा परिषद (CISCE) और उत्तर प्रदेश बोर्ड ऑफ़ हाई स्कूल और इंटरमीडिएट एजुकेशन (यूपी बोर्ड)** से संबद्ध स्कूलों में इस्तेमाल किये जाने वाले ग्यारहवीं और बारहवीं कक्षा के इतिहास के पाठ्यक्रमों और पाठ्यपुस्तकों की समीक्षा की गई। उच्च माध्यमिक स्तर पर इन बोर्डों के इतिहास पाठ्यक्रम की समीक्षा यह जानने के लिए की गई कि इन बोर्डों में इतिहास को पढ़ाने के औचित्य और उद्देश्यों का पता लगाया जा सके और साथ ही यह भी जाना जा सके कि इनमें पुरातात्विक सामग्री को कितना और किस तरह दिया गया है और इस सम्बन्ध में कैसी गतिविधियां दी गई हैं। इतिहास की पाठ्यपुस्तकों की सामग्री, प्रश्नों / अभ्यासों और चित्रों के संदर्भ में समीक्षा की गई कि कैसे इन पाठ्यपुस्तकों की पुरातात्विक सामग्रियां इतिहास की बेहतर समझ और छात्रों के बीच पुरातत्व की बुनियादी समझ में योगदान करती हैं और कैसे ये पाठ्यपुस्तकें छात्र-छात्राओं को सांस्कृतिक विरासत के संरक्षण के लिए संवेदनशील बनाती हैं।

जैसा कि हम जानते हैं कि दसवीं कक्षा तक इतिहास सामाजिक विज्ञान का हिस्सा है और कक्षा XI-XII में यह एक वैकल्पिक विषय के रूप में उपलब्ध है। सीबीएसई से जुड़े स्कूल NCERT द्वारा तैयार किए गए पाठ्यक्रम और पाठ्यपुस्तकों का अनुसरण करते हैं, जबकि अन्य दो बोर्ड सिर्फ पाठ्यक्रम तैयार करते हैं और संबद्ध स्कूलों को निजी प्रकाशकों द्वारा प्रकाशित पाठ्य पुस्तकों में चुनाव का विकल्प देते हैं। CISCE और UP के विपरीत, NCERT पाठ्यक्रम विषय के औचित्य, इसे पढ़ाने के उद्देश्य के साथ-साथ विभिन्न प्रकरणों (topic) के उद्देश्यों पर भी प्रकाश डालता है। पाठ्यक्रम और पाठ्यपुस्तकों की समीक्षा से पता चलता है कि सीबीएसई और यूपी बोर्ड उच्च माध्यमिक स्तर पर प्राचीन, मध्यकालीन और आधुनिक भारतीय इतिहास पढ़ाते हैं, जबकि CISCE बोर्ड इस समय अवधि के बारे में कक्षा IX-X में पढ़ाता है। इसलिए तुलनात्मक विश्लेषण के लिए हमने CISCE बोर्ड की कक्षा IX -X के पाठ्यक्रम और पाठ्यपुस्तकों की, जो प्राचीन, मध्यकालीन व आधुनिक भारतीय इतिहास की चर्चा करते हैं के साथ-साथ इनके

कक्षा XI-XII के पाठ्यक्रम और पाठ्यपुस्तकों की भी समीक्षा की है जो आधुनिक भारतीय और विश्व इतिहास से संबंधित हैं।

उच्च माध्यमिक स्तर पर इतिहास शिक्षण के उद्देश्य

उच्च माध्यमिक स्तर पर इन बोर्डों में इतिहास शिक्षण के औचित्य, इसे पढ़ाने के उद्देश्य और इसमें पुरातत्व संबंधी सामग्री और गतिविधियों के प्रस्तुतीकरण का पता लगाने के लिए इनके इतिहास के पाठ्यक्रम की समीक्षा की गई।

एनसीईआरटी पाठ्यक्रम का पहला उद्देश्य विषय के साथ छात्रों की रचनात्मक सहभागिता को बढ़ावा देना है। इसलिए, पाठ्यक्रम को इस तरह से तैयार किया गया है कि यह छात्रों में एक ऐतिहासिक संवेदनशीलता विकसित करने में मदद करता है और साथ ही इतिहास के महत्व के बारे में उन्हें जागरूक करता है। पाठ्यक्रम का दूसरा उद्देश्य छात्रों पर भार को कम करना है। ऐसा कुछ महत्वपूर्ण मुद्दों और घटनाओं पर ध्यान केंद्रित करके किया गया है। भार में कमी के लक्ष्य को प्राप्त करके, इसके तीसरे उद्देश्य के रूप में पाठ्यक्रम की अपेक्षा है कि यह शिक्षकों को इतिहास के विविध प्रकरणों को गहराई से जानने हेतु पर्याप्त समय प्रदान करेगा। चौथा, पाठ्यक्रम ने अन्य प्रकरणों के साथ ही हाशिये पर रह रहे लोगों व लैंगिक मुद्दों पर ध्यान केंद्रित कर ऐतिहासिक पूछताछ / अध्ययन के दायरे को व्यापक बनाने का प्रयास किया है। पाँचवें, अंतःविषय की पाठ्यचर्या संबंधी चिंताओं को संबोधित करते हुए यह पाठ्यक्रम विभिन्न विषयों के बीच के संपर्क को भी प्रदर्शित करता है और इस तरह यह पाठ्यक्रम इतिहास के विचार को व्यापक बनाने में मदद करता है।

कक्षा XI और XII में, पाठ्यक्रम ने समय और स्थान पर फैले विषयों की ऐतिहासिक समझ को विकसित करने और बढ़ावा देने के लिए एक मुद्दा आधारित दृष्टिकोण (thematic approach) अपनाया है। इसलिए, छात्रों को इस विचार से परिचित कराने का ध्यान रखा गया है कि ऐतिहासिक ज्ञान बहस के माध्यम से विकसित होता है और साक्ष्यों को ध्यान से पढ़ना और व्याख्या करना आवश्यक है।

बारहवीं कक्षा में, पाठ्यक्रम विद्यार्थियों का परिचय प्राचीन, मध्ययुगीन और आधुनिक भारतीय इतिहास के कुछ मुख्य प्रकरणों से करता है जो छात्रों को प्रत्येक विषय के बारे में अधिक विस्तार और गहराई से जानने का अवसर देता है। कक्षा बारहवीं के पाठ्यक्रम को इस तरह से तैयार किया गया है कि प्रत्येक अध्याय एक विशेष प्रकार के स्रोत का अन्वेषण हो जाता है: पुरातात्विक अवशेष, शिलालेख, महाकाव्य, काल क्रम, धार्मिक ग्रंथ, यात्रा विवरण, सरकारी रिपोर्ट, राजस्व मैनुअल, पुलिस रिकॉर्ड, समाचार पत्र, भवन, चित्र, विज्ञापन, मौखिक स्रोत।

CISCE पाठ्यक्रम इतिहास पढ़ाने के पीछे विस्तृत तर्क या उद्देश्य प्रदान नहीं करता है। माध्यमिक स्तर पर इसके पाठ्यक्रम का उद्देश्य विद्यार्थियों को भारतीय ऐतिहासिक विकास के उन पहलुओं की समझ से परिचित कराना है जो समकालीन भारत की समझ के लिए महत्वपूर्ण हैं। इसके साथ ही विद्यार्थियों में विभिन्न धाराओं की एक वांछनीय समझ को जागृत करना है जिन्होंने भारतीय राष्ट्र और इसकी सभ्यता और संस्कृति के विकास में योगदान दिया है। मानव जाति की कुल विरासत के लिए विभिन्न संस्कृतियों द्वारा किए गए योगदान के प्रति एक वैश्विक ऐतिहासिक परिप्रेक्ष्य विकसित करना भी इसका एक महत्वपूर्ण उद्देश्य है।

उच्चतर माध्यमिक स्तर पर, पाठ्यक्रम का उद्देश्य शिक्षार्थियों को अध्ययन अवधि की महत्वपूर्ण घटनाओं और व्यक्तित्वों का क्रमानुसार और संदर्भ के साथ ज्ञान प्रदान करना है, तथ्यात्मक सबूतों से परिचित कराना है, जिसके आधार पर उस काल अवधि के बारे में स्पष्टीकरण या निर्णय स्थापित किए जाने चाहिए। इसके साथ ही समस्याओं के अस्तित्व और व्याख्या के साक्ष्य की प्रासंगिकता, तथ्यों को इकट्ठा करने की क्षमता का विकास करना, साक्ष्य का मूल्यांकन करना और ऐतिहासिक दृष्टिकोण से मुद्दों पर चर्चा करना, नए साक्ष्य के प्रकाश में ऐतिहासिक विचारों को पढ़ने या साक्ष्य की नई व्याख्या करने की क्षमता विकसित करना, ऐतिहासिक निरंतरता की भावना को बढ़ावा देना, पूर्वाग्रहों को कम करने और विश्व इतिहास के लिए एक अधिक अंतरराष्ट्रीय दृष्टिकोण विकसित करने के लिए, विषय की सही शब्दावली का उपयोग करके विचारों और तर्कों को स्पष्ट रूप से व्यक्त करने की क्षमता विकसित करना, और विभिन्न प्रकार के ऐतिहासिक साक्ष्यों से परिचित कराना और उनके मूल्यांकन में आने वाली समस्याओं के बारे में जागरूक कराना आदि इसके कुछ अन्य महत्वपूर्ण उद्देश्य हैं।

माध्यमिक स्तर पर कक्षा IX के पाठ्यक्रम में हड़प्पा सभ्यता से लेकर गुप्त काल, दक्षिण भारत का मध्यकालीन भारतीय इतिहास, दिल्ली सल्तनत, मुगल इतिहास और विश्व इतिहास की कुछ महत्वपूर्ण घटनाएं अर्थात् पुनर्जागरण और औद्योगिक क्रांति शामिल हैं। दसवीं कक्षा का पाठ्यक्रम मुख्यतः 1857 से 1947 तक भारतीय स्वतंत्रता संग्राम और विश्व इतिहास से संबंधित कुछ विषयों से संबंधित है। अगर हम ग्यारहवीं और बारहवीं कक्षा के पाठ्यक्रम की बात करते हैं, तो इसमें राष्ट्रवाद का इतिहास (स्वदेशी आंदोलन से सविनय अवज्ञा तक) और विश्व इतिहास के कुछ विषय शामिल हैं। हालांकि पाठ्यक्रम में छात्रों में ऐतिहासिक संवेदनशीलता विकसित करने के बारे में कुछ भी नहीं कहा गया है, लेकिन विषयों और उप-विषयों को सूचीबद्ध करते समय इसमें विभिन्न प्रकार के स्रोतों का उल्लेख है। हर अध्याय में साहित्यिक, पुरातात्विक साक्ष्य शीर्षक से जानकारी दी गई है। यह इंगित करता है कि पाठ्यक्रम निर्माता छात्रों को विभिन्न स्रोतों की बुनियादी समझ प्रदान करना महत्वपूर्ण समझते हैं। कक्षा XI-XII के लिए पाठ्यक्रम हालांकि विषयों और उप-विषयों के रूप में है, लेकिन शुरुआत में यह न केवल ज्ञान पक्ष पर ध्यान केंद्रित करता है, बल्कि पाठ्यक्रम के एक महत्वपूर्ण उद्देश्य के रूप में स्रोतों पर काम करने के माध्यम से विभिन्न क्षमताओं के विकास पर भी ध्यान दिलाता है।

हमने अध्ययन के लिए एक राज्य बोर्ड उत्तर प्रदेश लिया है। उत्तर प्रदेश में कुछ माध्यमिक स्कूल CISCE और CBSE बोर्ड से संबद्ध हैं, लेकिन अधिकांश माध्यमिक विद्यालय उत्तर प्रदेश बोर्ड से संबद्ध हैं। कक्षा आठवीं तक पाठ्यक्रम व पाठ्यपुस्तकें शासन द्वारा तैयार करवाये जाते रहे हैं, लेकिन कक्षा IX के बाद स्कूल राज्य द्वारा तैयार किए गए पाठ्यक्रम पर विभिन्न लेखकों द्वारा लिखित पाठ्य पुस्तकों का चयन करने के लिए स्वतंत्र हैं। इस स्तर पर इतिहास पाठ्यक्रम के मुख्य उद्देश्य हैं- भारतीय इतिहास को विश्व इतिहास के संदर्भ में देखना, छात्र-छात्राओं का मूल्यांकन करते समय उनकी मौलिकता पर ध्यान केंद्रित करना, छात्रों को नवीनतम शोध से समझ हासिल करने के लिए प्रेरित करना। ऐतिहासिक यात्राओं के महत्व को ध्यान में रखते हुए, पाठ्यक्रम शैक्षिक यात्रा को अनिवार्य बनाने और छात्रों को वर्ष में कम से कम एक बार इस तरह की यात्रा पर ले जाने का सुझाव देता है। पाठ्यक्रम यह स्पष्ट करता है कि इतिहास का अध्ययन पूरे राष्ट्र के अतीत पर आधारित होना चाहिए ताकि छात्र अपने पूर्वजों की संस्कृति, उनकी उपलब्धियों के बारे में ज्ञान प्राप्त कर सकें, उनसे प्रेरणा ले सकें और ग़लतियों को दोहराने से बच सकें। इसका उद्देश्य छात्रों को उन तथ्यों से अवगत कराना है, जिन्होंने राष्ट्रवाद की भावनाओं को विकसित करने में मदद की और उन कमियों को भी समझने में मदद करना है जिन्होंने ऐसी भावनाओं के विकास में बाधाएं उत्पन्न कीं ताकि वे स्वयं इन ग़लतियों को न दोहराएं। पाठ्यक्रम अपने उद्देश्य के रूप में छात्रों में सार्वभौमिक भाईचारे, मानवतावादी और यथार्थवादी दृष्टिकोण की भावनाओं को विकसित करना चाहता है। यह अपने अतीत के आधार पर वर्तमान की समझ बनाने का सुझाव देता है और अंतर्राष्ट्रीय घटनाक्रम और हमारे राष्ट्र पर इसके प्रभाव को समझने का सुझाव देता है। इतिहास को रोचक बनाने के लिए जहाँ भी संभव हो मानचित्र और अन्य चित्रों के उपयोग करने का भी प्रस्ताव करता है।

कक्षा XI में इतिहास का पाठ्यक्रम इतिहास के स्रोतों पर केंद्रित है, जिसमें प्रागितिहास से लेकर गुप्त वंश तक प्राचीन भारतीय अतीत और मध्ययुगीन इतिहास में सल्तनत से सूफ़ी संतों तक और कक्षा XII में भारतीय इतिहास में मुगलों से 1947 में भारत की स्वतंत्रता तक के इतिहास को जगह मिली है। पाठ्यक्रम केवल प्रकरणों और उपप्रकरणों के रूप में है। इस पाठ्यक्रम में इतिहासकार के शिल्प के बारे में कुछ भी नहीं कहा गया है कि कैसे छात्र विभिन्न स्रोतों का प्रयोग करेंगें और इस विषय से जुड़े कौशल को हासिल करेंगें।

CISCE और UP के विपरीत, एनसीईआरटी पाठ्यक्रम न केवल शुरुआत में विषय के औचित्य और इसे पढ़ाने के उद्देश्य पर प्रकाश डालता है, बल्कि सभी प्रकरणों के साथ भी उद्देश्य का उल्लेख करता है। यूपी और आईसीएसई पाठ्यक्रम दोनों ऐतिहासिक यात्राओं को महत्व देते हैं। यूपी इसे कुछ हद तक अनिवार्य करने का सुझाव देता है, जबकि ICSE इसे IX, XI और XII के लिए सुझाये गए कई परियोजना कार्यों में से एक के रूप में रखता है।

विभिन्न बोर्डों की पाठ्य पुस्तकों की तुलना

विभिन्न बोर्डों की इतिहास की पाठ्यपुस्तकों की पाठ्य सामग्री, चित्रों और अभ्यास की तुलना द्वारा यह जानने का प्रयास किया गया कि ये पाठ्यपुस्तकें पुरातात्विक सामग्री को कितना तथा किस तरह प्रस्तुत करती हैं. इसके साथ ही यह भी जानने का प्रयास किया गया है कि इनकी पाठ्य सामग्री, अभ्यास व गतिविधियाँ विद्यार्थियों को पुरातात्विक सामग्री अथवा सांस्कृतिक विरासत के संरक्षण हेतु किस हद तक प्रेरित करती हैं। पाठ्यपुस्तकों की तुलना करते हुए, अन्वेषक ने पुरातत्व का व्यापक संभव दृष्टिकोण लिया, जिसमें हमारी धरती पर रहने वाले सभी लोगों के संपूर्ण इतिहास से जुड़े आरंभिक समय से लेकर वर्तमान समय तक के सभी भौतिक साक्ष्य शामिल हैं।

पाठ्यसामग्री

NCERT की पाठ्यपुस्तकें उन उद्देश्यों को प्राप्त करते हुए दिखती हैं, जिन्हें प्राप्त करना पाठ्यक्रम में निर्धारित किया गया था। ये पाठ्यपुस्तकें अतीत को समझने के लिए विभिन्न प्रकार के स्रोतों पर बहुत अधिक ज़ोर देते हुए विषयगत दृष्टिकोण (thematic approach) पर आधारित हैं। पुरातात्विक स्रोत इनमें से एक हैं। ये पाठ्यपुस्तकें न केवल पुरातत्व पर सामग्री प्रदान करती हैं बल्कि पूरी सामग्री को पुरातात्विक सामग्री के साथ जोड़ कर प्रस्तुत करती हैं। पाठ्यपुस्तक केवल उस दौरान के प्रारंभिक मानव समाजों, प्राचीन सभ्यताओं, प्रारंभिक शहरों, राज्यों, साम्राज्यों, राजवंशों, शासकों, अर्थव्यवस्था, धर्म, कला-वास्तुकला और समाजों के विकास के बारे में ही जानकारी प्रदान नहीं करती हैं, बल्कि ऐसा वे बड़े दिलचस्प रूप से उन प्राथमिक स्रोतों के माध्यम से करती हैं जिससे हमें इन समयावधियों के बारे में पता चलता है। पुरातत्वविदों द्वारा किए गए पुरातात्विक कार्य और विभिन्न पुरातात्विक स्थलों पर चर्चा विभिन्न अध्यायों का महत्वपूर्ण पहलू हैं। इसके अलावा, इन पाठ्यपुस्तकों में पुरातत्व से संबंधित विभिन्न शब्दों की व्याख्या भी की गई है, जैसे कि वनस्पति शास्त्री, पुरातत्व विज्ञानी, उत्खनन, पुरातत्व, पुरातात्विक साक्ष्य, सिक्के, मुहरें आदि।

इतिहास में कक्षा XI की पाठ्यपुस्तक 'विश्व इतिहास के कुछ विषय' प्राचीन मेसोपोटामिया, अफ्रीका, इराक, रोमन साम्राज्य, मध्य पूर्व क्षेत्रों, यूरोप, उत्तरी अमेरिका और कई अन्य जैसे दुनिया के शुरुआती प्राचीन समाजों के बारे में बताती है। कक्षा XII की पाठ्यपुस्तक 'भारतीय इतिहास के कुछ विषय' के तीन भाग हैं जिनमें क्रमशः भारतीय इतिहास के प्राचीन, मध्यकालीन और आधुनिक कालखंडों के बारे में बताया गया है।

CISCE बोर्ड अपनी ओर से किसी भी पाठ्यपुस्तक को निर्धारित नहीं करता है और इस संबंध में स्कूलों को स्वयं पुस्तकों के चयन की स्वतंत्रता देता है। जांचकर्ता ने पाया कि CISCE स्कूलों में पियरसन द्वारा प्रकाशित 'लॉन्गमैन हिस्ट्री एंड सिविक्स' कक्षा IX-X के

लिए इस्तेमाल होने वाली सबसे लोकप्रिय पाठ्यपुस्तकों में से एक है, जबकि कक्षा XI-XII में आधुनिक भारत और विश्व इतिहास के लिए कल्याणी प्रकाशन की पाठ्यपुस्तक सबसे अधिक इस्तेमाल होने वाली पाठ्यपुस्तक है। कक्षा IX की पाठ्यपुस्तक जो प्राचीन और मध्ययुगीन भारतीय इतिहास से संबंधित है, में इन कालखंडों का विस्तृत कालानुक्रमिक इतिहास प्रस्तुत किया गया है। जैसा कि हम जानते हैं कि दसवीं कक्षा की पाठ्यपुस्तक का संबंध आधुनिक भारतीय इतिहास और विश्व इतिहास से है. यह पुस्तक भी इन कालखंडों के कालानुक्रमिक इतिहास को बहुत तथ्यात्मक विस्तार के साथ और मूर्तियों, इमारतों के विविध चित्रों के साथ प्रस्तुत करती है। अध्यायों के मुख्य बिंदु हैं, 'क्या आप जानते हैं' जो कुछ अतिरिक्त जानकारी प्रदान करते हैं, 'पता करें' जो कुछ और जानकारी प्राप्त करने के लिए कहते हैं, 'मुख्य शब्द' और 'अभ्यास' भी दिये गए हैं। जहाँ तक कक्षा XI-XII की पाठ्यपुस्तकों का सवाल है, ये अर्थव्यवस्था में विकास, औद्यो गीकरण, समाज का क्रांतिकारी चरित्र, विभिन्न विद्रोहों आदि पारंपरिक विषयों से संबंधित हैं। विश्व इतिहास का हिस्सा मुख्य रूप से संकट, परिवर्तन, राजनीतिक आंदोलनों, राजनीतिक प्रभुत्व, युद्ध, क्रांतियाँ आदि के बारे में बात करता है।।

इन पुस्तकों में अलग-अलग समय अवधि को इसके सभी पहलुओं जैसे- राजवंशों, शासकों, समाज, अर्थव्यवस्था, कला वास्तुकला और कई अन्य विवरणों के साथ प्रस्तुत किया गया है। विषय की शुरुआत करते समय साक्ष्यों का अक्सर शुरुआत में उल्लेख किया गया है। NCERT के विपरीत, ये पुस्तकें विषय वस्तु को पुरातात्विक अवशेषों के साथ प्रस्तुत करने की जगह पुरातत्व पर सामग्री अलग से प्रस्तुत करती हैं। CISCE पाठ्यपुस्तक की सामग्री पुराने पारंपरिक रूप में व्यवस्थित एक सामान्य कालानुक्रमिक इतिहास है जिसमे मुख्य बिंदुओं पर ज़ोर देते हुए ज़्यादातर जानकारियाँ बिन्दुवार ही दी गई हैं। इसे इन दोनों ही तरह की पाठ्यपुस्तकों में महाजनपदों पर दी गई सामग्री के उदाहरण द्वारा समझा जा सकता है। दोनों पाठ्यपुस्तकों में महाजनपदों पर सामग्री है, लेकिन NCERT पाठ्यपुस्तक में इस बात की चर्चा है कि महाजनपद कैसे अस्तित्व में आए और उनकी विशेषताएं क्या थीं CISCE पाठ्यपुस्तक सिर्फ विशिष्ट जनपदों, उनके शासकों और प्रशासन पर केंद्रित हैं। ब्रह्म समाज के भवन और कुछ अन्य भवनों का उल्लेख इन CISCE पुस्तकों में किया गया है लेकिन यहाँ उनका अध्ययन केवल उनकी स्थापना के इर्द गिर्द ही सीमित है। एनसीईआरटी की पाठ्यसामग्री निरंतर छात्रों के साथ संवाद करती है, बीच-बीच में सोचने पर मजबूर कर देने वाले प्रश्न उठाती है ताकि बच्चे रुककर विचार करें। साथ ही इनमे विभिन्न साक्ष्यों के साथ भी प्रश्न दिये गए हैं जो छात्रों को केवल एक समय विशेष के कुछ पुरातात्विक स्रोतों के बारे में जानकारी प्राप्त करने तक सीमित न रहकर विद्यार्थियों को पुरातात्विक सामग्री की मदद से और सीखने व समझने के लिए प्रेरित करते हैं। कुछ प्रश्नों के उदाहरण इस तरह हैं जैसे कि राजा को सिक्कों में कैसे चित्रित किया गया है? मूर्तिकला में ऐसे कौन से तत्व हैं जो सुझाव देते हैं कि यह एक राजा की छवि है? इस तरह एन सी ई आर टी की पाठ्यपुस्तकों में सभी जगह विद्यार्थियों को पाठ्यसमग्री पर गहराई से सोचने और विश्लेषण करने के लिए प्रोत्साहित करने का प्रयास किया गया है।

यूपी के पाठ्यक्रम के दस्तावेज़ में स्पष्ट रूप से उल्लेख किया गया है कि कोई भी पाठ्यपुस्तक बोर्ड द्वारा निर्धारित या सुझाई नहीं गई है और स्कूल प्राचार्य अपने विषय शिक्षक के परामर्श से पाठ्यक्रम के अनुसार पाठ्यपुस्तक का चयन कर सकते हैं। यूपी में, सरकारी एजेंसी द्वारा कक्षा आठवीं तक की पाठ्यपुस्तकें तैयार की जाती हैं और कक्षा IX से विभिन्न प्रकाशनों की पाठ्यपुस्तकें उपलब्ध हैं, जिनमें से चयन करने के लिए विद्यालय स्वतंत्र हैं। ये पाठ्यपुस्तकें यूपी द्वारा तैयार पाठ्यक्रम के आधार पर लिखी गई हैं। यूपी के विभिन्न हिस्सों के शिक्षकों से बात के द्वारा यूपी के स्कूलों में 3 सबसे लोकप्रिय प्रकाशनों की पाठ्यपुस्तकों के उपयोग के बारे में पता चला। ये हैं राजलक्ष्मी प्रकाशन, विद्या प्रकाशन और हिंदी प्रचारक प्रकाशन है। इन सभी पाठ्यपुस्तकों की समान विशेषताएं हैं। ये किताबें मुख्य रूप से तथ्यात्मक विवरणों से भरी लंबे कालानुक्रमिक इतिहास को प्रस्तुत करती हैं, लेकिन ये विभिन्न पुरास्थलों से खुदाई में मिले पुरावशेषों, सिक्कों, शिलालेखों, मकबरों, मस्जिदों, किलों आदि पर भी विस्तृत जानकारी देती हैं। ये पुस्तकें विभिन्न राजवंशों के दौरान विभिन्न शासकों, अर्थव्यवस्था, राजनीति, समाज और प्रशासन पर विवरण प्रदान करती हैं। इसे पारंपरिक पाठ प्रस्तुत करने का तरीका माना जा सकता है, जिसको इसी रूप में संपूर्ण भारत की पुस्तकों में वर्षों से ऐसा ही दिया जाता रहा है। आधुनिक इतिहास से संबंधित पुस्तक में अलीगढ़ में प्राच्य महाविद्यालय, कोलकाता में हिंदू कॉलेज, ब्रह्म समाज, आर्य समाज, प्रार्थना/ समाज, सेलुलर जेल जैसी विभिन्न इमारतों का भी उल्लेख किया गया है, लेकिन वास्तुकला के दृष्टिकोण से इन पर चर्चा नहीं की गई है। इन पुस्तकों की एक महत्वपूर्ण विशेषता विभिन्न इतिहासकारों या पुरातत्वविदों के दृष्टिकोण या कथन हैं जो सभी अध्यायों में प्रदान किए गए हैं। इस बोर्ड की पाठ्यपुस्तकों की एक अन्य महत्वपूर्ण विशेषता है प्रत्येक पुस्तक के अंत में महत्वपूर्ण तिथियों, व्यक्तित्वों, मानचित्रों और ऐतिहासिक स्थानों पर दिये गए विभिन्न प्रकार के परिशिष्ट। ऐतिहासिक स्थानों पर दिये गए परिशिष्ट में ऐतिहासिक महत्व के स्थानों की वर्तमान स्थिति और वहां से खुदाई में निकली सामग्री का विवरण दिया गया है। ऐसी प्रत्येक जगह के बारे में दिये गए इन संक्षिप्त लेखों से कला, वास्तुकला, मूर्तिकला और कभी-कभी इन स्थानों पर स्थित संग्रहालयों और उनके संग्रह के बारे में भी जानकारी मिलती है।

एनसीईआरटी की पुस्तकें भारत की कला और वास्तुकला पर ध्यान केंद्रित करने का प्रयास करती हैं और इसके इतिहास के बारे में बताती हैं। विभिन्न अध्यायों में इस पहलू पर चर्चा करने के साथ-साथ इस भौतिक या मूर्त विरासत की चर्चा एक अलग अध्याय में भी की गई है। दूसरी ओर, अन्य पुस्तकों में इस तरह की सामग्री की चर्चा उस साम्राज्य

या शासक के शासन की चर्चा करते समय की गई है जिसके शासन के दौरान इसका निर्माण हुआ था। NCERT पुस्तक पुरासामग्री के संरक्षण में संलग्न विदेशी अधिकारियों और भारतीयों के प्रयासों को भी इंगित करती है। कलाकृतियों की खोज, उनके लंदन ले जाए जाने, एशियाटिक सोसाइटी पर चर्चा और ब्रिटिश पुरातत्वविदों के दृष्टिकोण NCERT पाठ्यपुस्तकों की महत्वपूर्ण सामग्री हैं। मंदिरों के निर्माण में दक्षिण भारत, उत्तर भारत और पश्चिमी भारत में अपनाई गई विभिन्न वास्तुकला शैलियों पर बहुत सारे चित्रों और चर्चा के साथ प्रस्तुत किए गए कला और वास्तुकला के विभिन्न उदाहरण छात्रों को भारत की कलात्मक उत्कृष्टता का भान कराते हैं। एनसीईआरटी की सभी पाठ्यपुस्तकों में पुरातात्विक अवशेष, चाहे वे महलों, खंडहरों के रूप में हों या अन्य मूर्त प्रमाणों के रूप में, भारतीय इतिहास के सभी कालखंडों से जुड़ी इन सामग्रियों की चर्चा और चित्रण किया गया है। इसके अलावा, इसमें नक्शे भी हैं, विभिन्न शहरों के और विभिन्न इमारतों की योजनाएं और विभिन्न वास्तुशिल्प और मूर्तिकला नमूनों के रेखा चित्र हैं। इस तरह NCERT पाठ्यपुस्तकों में साहित्यिक और मौखिक परंपराओं, स्मारकों, शिलालेखों और अन्य अभिलेखों से मिलाजुलाकर प्रस्तुत की गई सामग्री छात्रों को इतिहास को बेहतर तरीके से समझने में मदद करती है।

प्रश्न/अभ्यास

जहाँ तक NCERT की पाठ्यपुस्तकों में दिए गए प्रश्नों का प्रश्न है, अध्यायों में विभिन्न प्रकार के प्रश्न होते हैं जैसे लघु उत्तर, दीर्घ उत्तर, चित्र पर प्रश्न, मानचित्र कार्य, परियोजना कार्य जो छात्रों से संग्रहालयों या किसी ऐतिहासिक स्मारक या पुरास्थल पर जाने और उस पर एक रिपोर्ट तैयार करने की अपेक्षा करते हैं। ये प्रश्न तुलना, संक्षिप्तिकरण, सूचीबद्ध करने, संक्षिप्त लेखन, चर्चा, तर्क, व्याख्या, विश्लेषण और अन्वेषण पर ध्यान केंद्रित करते हैं। जिज्ञासु छात्रों को और अधिक जानने के लिए कुछ पुस्तकों के नाम और लिंक भी दिए गए हैं।

जहां तक CISCE पाठ्यपुस्तकों का सवाल है, कक्षा IX-X की पाठ्यपुस्तकों में संक्षिप्त उत्तर, संरचित प्रश्न और एक स्रोत आधारित प्रश्न होता है। इन पुस्तकों की एक दिलचस्प विशेषता स्रोत आधारित / चित्र अध्ययन प्रश्न है जहां 3-4 प्रश्नों के साथ एक छवि, कलाकृतियों, शिलालेख, सिक्का, मुहर या पेंटिंग की तस्वीर दी गई है। इसके अपने फायदे हैं क्योंकि यह छात्रों को इतिहास के अध्ययन के लिए उपयोग किए जाने वाले विभिन्न प्रकार के स्रोतों से परिचित कराता है और उन्हें इन स्रोतों का विश्लेषण करने के लिए प्रोत्साहित भी करता है। लेकिन एनसीईआरटी के विपरीत ये प्रश्न अधिकतर ज्ञान की जाँच करते हैं, जैसे एक अध्याय में उन्होंने छात्रों से एक मंदिर की तस्वीर का अध्ययन करने के लिए कहा है और फिर छात्रों से वास्तुशिल्प विशेषताओं का निरीक्षण करने और इसे पहचानने के लिए कहने के बजाय छात्रों से पूछा गया है - मंदिर कहाँ स्थित है, किसने इसका निर्माण किया, यह मंदिर किस देवता का है आदि. संरचित प्रश्नों में उन्होंने कुछ बिंदु दिए हैं जिन पर छात्रों से उत्तर अपेक्षित है। ये प्रश्न केवल तथ्यात्मक विवरण पर केंद्रित हैं और मुख्य रूप से ज्ञान आधारित हैं। उच्चतर माध्यमिक स्तर पर लघु और दीर्घ उत्तरीय दोनों प्रश्न दिए गए हैं लेकिन ये केवल तथ्यात्मक विवरण पर आधारित हैं। अभ्यास प्रश्न सामान्यतया सूचना केंद्रित हैं। बहुत कम प्रश्न ही 'क्यों' और 'कैसे' पर ध्यान देते हैं।

यूपी की पाठ्यपुस्तकों में दिए गए प्रश्न आम तौर पर तीन प्रकार के हैं: लघु उत्तरीय, दीर्घ उत्तरीय, बहुविकल्पीय प्रश्न और कभी-कभी ऐतिहासिक स्थानों, मार्गों, हमले के स्थानों और साम्राज्य की सीमा के मानचित्रण पर एक प्रश्न किया गया है। अधिकांश प्रश्न ज्ञान आधारित हैं। बहुत कम प्रश्नों में ही विद्यार्थियों से मूल्यांकन, विश्लेषण की अपेक्षा की गई है. किसी भी प्रकाशन की पुस्तक में चित्र या अन्य प्रकार के स्रोतों पर प्रश्न नहीं हैं।

चित्र

छात्र की कल्पना को साकार करने में चित्र महत्वपूर्ण भूमिका निभाते हैं। जहां तक एनसीईआरटी की किताबों का सवाल है, इन किताबों में दिए गए चित्र बहुत स्पष्ट, रंगीन और विस्तृत टिप्पणी के साथ हैं। चित्रों में सिक्का, मूर्तिकला, शिलालेख, मंदिर, मस्जिद और दरगाह, विभिन्न कला रूप, महल, इमारतें, शहरों का लेआउट, इमारतों की योजना, वास्तुकला और मूर्तिकला नमूनों के रेखा चित्र, नक्शे, कलाकृतियों और अन्य सामग्री के चित्र शामिल हैं। इन पाठ्यपुस्तकों में उपकरण बनाने में शामिल प्रक्रियाओं और तकनीकों के चित्र भी हैं जो एक छात्र के लिए तत्कालीन समय की कल्पना करने में बहुत मदद करते हैं।

CISCE की कक्षा IX-X की पाठ्यपुस्तक में दिये गए चित्र छोटे हैं लेकिन काफी स्पष्ट और रंगीन हैं। हालांकि सभी नहीं, लेकिन कुछ चित्र छात्रों को चित्र के बारे में अधिक जानने के लिए कहते हैं। कक्षा XI-XII की पाठ्यपुस्तकों में बहुत कम चित्र हैं और वे भी विभिन्न व्यक्तित्वों और कुछ मानचित्रों के हैं। ये चित्र काले और सफेद रंग में हैं और बहुत अच्छी गुणवत्ता के नहीं हैं। इस स्तर की पाठ्यपुस्तकें विभिन्न घटनाओं और घटनाओं से संबंधित स्थानों का कोई चित्र प्रदान नहीं करती हैं।यूपी बोर्ड की सभी प्रकाशन पुस्तकों में बहुत कम चित्र दिए गए हैं और जो चित्र मौजूद हैं वे स्पष्ट और रंगीन नहीं हैं।

निष्कर्ष

तीन विद्यालयी बोर्डों के इतिहास पाठ्यक्रम और पाठ्यपुस्तकों की समीक्षा से पता चलता है कि पुरातात्विक अवशेषों की सामग्री और उनके कवरेज के संदर्भ में CISCE, UP और CBSE पाठ्यक्रम और पाठ्यपुस्तकों में व्यापक अंतर है। यह सही है कि गतिविधि आधारित शिक्षण और शैक्षिक यात्राएं यह सुनिश्चित करती हैं कि छात्र-छात्राएं

वास्तविक ऐतिहासिक ज्ञान प्राप्त करने और न केवल स्कूल में बल्कि बाहर के जीवन में उस ज्ञान और कौशल को लागू करने में सक्षम होंगे जिसे उन्होने विद्यालय में अर्जित किया है। लेकिन इन सबसे पहले यह सुनिश्चित करना ज़रूरी होगा कि छात्र-छात्राओं द्वारा प्रयोग में लाई जाने वाली पाठ्यपुस्तकों और अन्य पाठ्यसामग्रियों में ऐसी पुरातात्विक सामग्रियों को यथास्थान और पर्याप्त रूप में दिया गया हो। इसके साथ ही पूरी विषय सामग्री को पुरातात्विक अवशेषों को साथ लेते हुए प्रस्तुत करने की आवश्यकता है न कि इन्हें अलग से प्रस्तुत करने की। इस तरह से प्रस्तुत सामग्री में छात्र-छात्राओं के साथ प्रश्नों के ज़रिये निरंतर संवाद करने की भी ज़रूरत है ताकि सभी विद्यार्थियों को उनकी सांस्कृतिक विरासत के प्रति संवेदनशील बनाया जा सके। इस तरह से किए गए इतिहास-शिक्षण से विद्यार्थियों को सांस्कृतिक विरासत के प्रति अधिक जागरूक और संवेदनशील बनने में मदद मिलेगी और अंततः उन्हें इसे संरक्षित करने के लिए भी प्रोत्साहित किया जा सकेगा। एनसीईआरटी की इतिहास की पाठ्यपुस्तकें न केवल पुरातत्व पर सामग्री प्रदान करती हैं बल्कि पूरी सामग्री को पुरातात्विक सामग्री के साथ जोड़कर प्रस्तुत करती हैं और ऐसा वे विभिन्न तरह के चित्रों, प्रश्नों और गतिविधियों के ज़रिये करती हैं। इन सभी प्रयासों के माध्यम से ये पुस्तकें विद्यार्थियों को अपनी सांस्कृतिक धरोहर से परिचित कराने के साथ ही साथ उन्हें इनके संरक्षण के प्रति भी प्रेरित करती हैं।अन्य बोर्डों के इतिहास के पाठ्यक्रम और पाठ्यपुस्तकों को इस दिशा में काफी बदलाव करने की आवश्यकता है। यहाँ हमारा उद्देश्य यह सुझाव देना नहीं है कि प्रत्येक बोर्ड को एनसीईआरटी / सीबीएसई पाठ्यक्रम और पाठ्यपुस्तकों का पालन करने की आवश्यकता है, लेकिन इतिहास के शिक्षण-प्रशिक्षण में दुनिया भर में आए बदलाव को देखते हुए जहाँ स्रोत आधारित शिक्षण और विभिन्न कौशलों की प्राप्ति को इतिहास शिक्षण के महत्वपूर्ण पहलुओं के रूप में कई वर्षों से माना जाता रहा है, को सभी स्कूल बोर्डों को चाहे वे निजी हों या राज्य के, अपने पाठ्यक्रम और पाठ्यपुस्तकों पर गहराई से विचार करना चाहिए और छात्रों की ग्रेड स्तर क्षमताओं और इतिहास शिक्षण के उद्देश्यों को ध्यान में रखते हुए इस व्यापक अंतर को दूर करने का प्रयास करना चाहिए। पाठ्यपुस्तकों को पाठ्यक्रम में निर्धारित व्यापक उद्देश्यों का पालन करने की आवश्यकता है।

नोट

*सीबीएसई से संबद्ध विद्यालयों में प्रायः एनसीईआरटी द्वारा तैयार पाठ्यक्रम और पाठ्यपुस्तकें प्रयोग में लाई जाती हैं अतः यहाँ तीन बोर्डों के पाठ्यक्रम और पाठ्यपुस्तकों की तुलनात्मक समीक्षा के समय सुविधा की दृष्टि से पूरे लेख में एनसीईआरटी और सीबीएसई को एक दूसरे के बदले इस्तेमाल किया गया है।

**उत्तर प्रदेश बोर्ड ऑफ हाईस्कूल एंड इंटरमीडियट ने वर्तमान सत्र से अपने संबद्ध विद्यालयों में एनसीईआरटी द्वारा तैयार पाठ्यक्रम और पाठ्यपुस्तकें प्रयोग में लाने का आदेश दिया है. यह अध्ययन 2017-18 में किया गया था जब वहाँ के विद्यालयों में व्यक्तिगत प्रकाशकों द्वारा तैयार पुस्तकें प्रयोग में लाई जाती थीं।

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Awareness on Disability and Inclusive Education among the Prospective Teachers

Abstract

Inclusive education is a system of education wherein students with and without disability learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities (Right to Persons with Disabilities Act (RPwD Act, 2016). The goal of inclusive education is to provide the most appropriate, equitable learning environment and opportunities to all students. This study focused on inclusive education for students with disabilities. The success of inclusive education is based on the attitude and acceptance of teachers and peer group. Teacher should have some knowledge about the different disability conditions and appropriate teaching methods in order to handle students with disabilities in the classroom environment. These skills and knowledge should be provided in their training programme itself. The study was an attempt to explore the awareness of prospective teachers on disability and inclusive education. 100 prospective teachers from ten B.Ed. Colleges situated in and around Coimbatore District, Tamil Nadu State were selected as samples. A questionnaire on the various aspects of disability and inclusive education was prepared by the researchers to collect the data. The results were discussed based the quantitative analysis. The finding shows that the Prospective teachers have very low awareness on disability and inclusive education.

Keywords: *Awareness, Prospective Teacher, Disability and Inclusive Education.*

Introduction

Present student-teachers or prospective teachers are the future teacher of our nation. They are the backbone for providing quality education to the students. The pre-service teacher education programme provides opportunities to them in practicing and developing skills and knowledge to improve students' learning. Education is the primary right of human being. According to the Article – 21A of Indian Constitution, the state shall provide free and compulsory education for all children in the age group of six to fourteen years (The Constitution of India, updated version, 2019). It is applicable to students with disabilities also. Inclusive education refers to the concept that all children learn together in the same schools. Every child has a right to inclusive education (UNICEF, 2017). According to RPwD Act 2016 it is a system of education wherein students with and without disability learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities. The success of inclusive education depends upon the attitude and acceptance of teachers and peer group. True inclusive education depends on the capacity of teachers in terms of knowing the nature of disability, selecting appropriate methods and materials for teaching students with disabilities. They play a critical role in creating inclusive environment that encourage and motivate students with disabilities to actively participate in the classroom activities.

Review of Literature

Campbell et al (2003) mentioned that the regular education teachers have expressed fears towards inclusion. This is because of their inability to accommodate students with special needs in their classes. Julka (2006) conducted a research study to highlight the instructional adaptations that are considered to be desirable and feasible in an inclusive classroom by regular teachers. The results show that the teachers could not select appropriate strategies in their classroom. This could be because of lack of knowledge about the disability. Ferguson (2008) noted that inclusive practice is not easy because it attempts to make learning available to everybody, everywhere and all the time.

Singal (2010) argued that in the inclusive classroom the mainstream teachers assume that the needs of children with disability should be taken care by the resource teachers or special educators and is not the primary concern of the general teachers. The author also quoted that the National Council of Educational Research and Training (NCERT, 2005) paper, recommended that there is a need to develop pedagogical skills among the future teachers of all teacher education programmes to handle all studnets in inclusive classrooms. Shukla and Agrawal (2015) have assessed the level of and awareness of learning disability among teachers of primary schools. The study result shows that the knowledge and awareness about learning disabilities among teachers of primary schools is very low.

Radojichikj and Natash (2015) conducted a study on teachers' acceptance of students with disabilities. The results inferred that the majority of teachers try to support individual capabilities and make some adaptations to students' needs, and use a variety of assessment procedures for all students. But they noticed that teachers don't feel comfortable in interaction with students with mental and physical disabilities, and in the communication with parents of students with disability. The result also indicates that teachers are not happy with supporting services provided in the classroom.

Limaye (2016) stated that the teacher must have trained skills in order to provide appropriate instruction to students with disabilities. The author also pointed out that the teacher attitude plays a major role in educating children with disabilities in social, emotional and intellectual development. Majority of the school employees in India are not trained to educate students with disabilities in the inclusive schools. And also they have negative attitudes towards students with disabilities. The reasons for this negative attitude might be they are not trained to handle students with disabilities.

Mader (2017) stated that teacher should have the knowledge and the ability to teach students with special needs. Now students with disabilities are enrolled in the inclusive schools, and mostly they are spending their days in general education classrooms than in special classes. General education teachers are teaching and spending more time with students with disabilities but, they have very little training on handling students with special needs.

Times of India (2018) reported that in Chandigarh, school going students with disabilities are facing difficult times due to not having enough educators to handle them. As per the academic session 2017 – 2018, there are around 4,418 students with disabilities enrolled in the different schools with only 26 special educators. It shows that one educator on every 196 students with special needs.

Kumar and Kumar (2018) stated that the number of disabilities increased from seven to twenty one as per RPwD Act, 2016. The roles and responsibilities of general educators, special educators and administrators should be reviewed to implement the revised RPwD Act. The general educators and special educators should be developed skills and knowledge to handle students with special disabilities. Accordingly the curriculum of pre-service and in-service teacher training

programmes need revision to provide comprehensive training to their trainees to cater the needs of disabled students.

Need of the Study

Diniz (2017) mentioned that according to the 2011 Census, 2.70 crore people with disabilities are living in India. Minimum 15 lakh special educators are required to address the needs of disabled population, but currently 90,000 to 1 lakh rehabilitation professionals are registered with the Rehabilitation Council of India. This statistics shows the importance and the role of general teacher in inclusive education. Successful inclusive education programme depends on well-trained teachers. One of the major issue in inclusive education is teachers need to be trained on curricular adaptation and evaluation methods to handle the students with disabilities (SSA, Confluence report, 2016). It shows that teachers should be skilled enough to understand the students' diverse needs. They should have some knowledge about the different disability conditions and teaching methods in order to handle students with disabilities in the classroom environment.

These skills and knowledge should be provided in their training programme itself. In addition to teaching methodology specifically for children with disabilities, teachers must also have the positive attitude towards inclusion and acceptance. If the teachers are trained in the disability areas, the students with various disabilities can have more accessibility to get equal opportunities, full participation which leads to total inclusion. But the present scenario is that Tamil Nadu Teacher Education University (TNTEU) syllabus (2016 onwards) contains very minimal amount of content regarding the inclusive education and disability. Totally 11 courses/papers are there in B.Ed programme among them only one course/paper deals with inclusive education. Teacher trainees will not be equipped with the required skills and knowledge to handle children with disabilities with this content. Hence a need was felt to study the awareness of teachers' trainees on disability and inclusive education.

Methodology

Objective of the Study

To find out the awareness on disability and inclusive education among prospective teachers.

Methodology

Research Design

Survey method under descriptive research design was adopted for this present study.

Sample

100 prospective teachers from Ten B.Ed. Colleges situated in and around Coimbatore District, Tamil Nadu State were selected as sample for this present study through random sampling method.

Research Tool

A questionnaire on the various aspects of disability and inclusive education was prepared by the researchers to collect the data. It consists of 30 questions with yes or no options presented under six major aspects namely

1. Inclusive education
2. Types of disability
3. Teaching methods and materials
4. Assessment and Evaluation
5. Assistive Technology
6. Government Facilities & Schemes

Data Collection Procedure

The questionnaire was distributed and instructions were given to the sample to read all the questions carefully and to give their responses in the respective columns. The

collected data was then analyzed for further interpretation.

Results

Discussion based on awareness about inclusive education

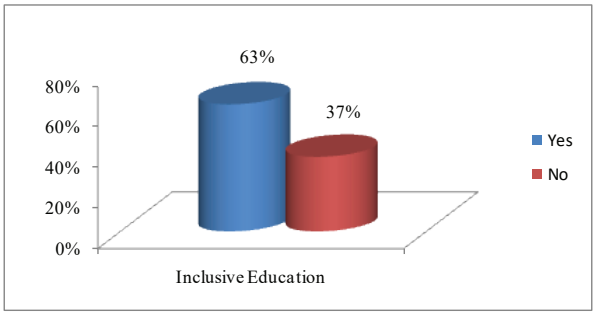

Figure 1: Awareness about Inclusive Education

Inclusive education brings all students together in one classroom. Five questions related to inclusive education were asked to the sample. The results show that 63% of prospective teachers were aware of the meaning and ideas of inclusive education. They mentioned that the main ideas of the inclusive education are to include all children to learn together, to get appropriate educational needs and to involve in all activities without any discrimination.

Discussion based on awareness about types of disability

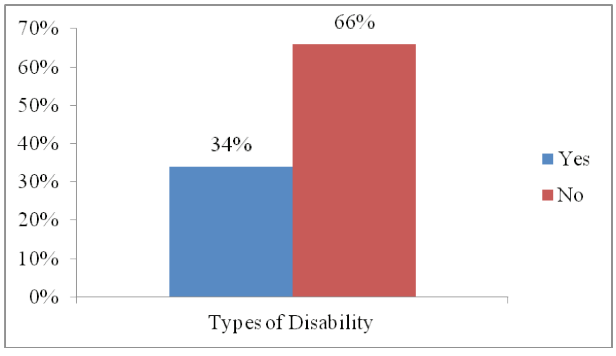

Figure 2: Awareness about the Types of Disability

According to Right of Persons with Disabilities (RPwD) Act 2016, person with disability means a person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others. There are 21 types disabilities are mentioned in this act, they are Blindness, Low Vision, Leprosoy Cured persons, Locomotor Disability, Dwarfism, Intellectual Disability, Mental Illness, Cerebral Palsy, Specific Learning Disabilities, Speech and Language disability, Hearing Impairment, Muscular Dystrophy, Acid Attack Victim, Parkinson's disease, Multiple Sclerosis, Thalassemia, Hemophilia, Sickle Cell disease, Autism Spectrum Disorder, Chronic Neurological conditions and Multiple Disabilities including Deaf Blindness. Questions were asked based the types of disability to the samples. Majority of the prospective teachers (66%) were not aware about the RPwD Act 2016. Only 34% of samples were aware about few types of disabilities such as visual impairment, hearing impairment, and intellectual disabilities.

Discussion based on awareness about teaching methods and materials

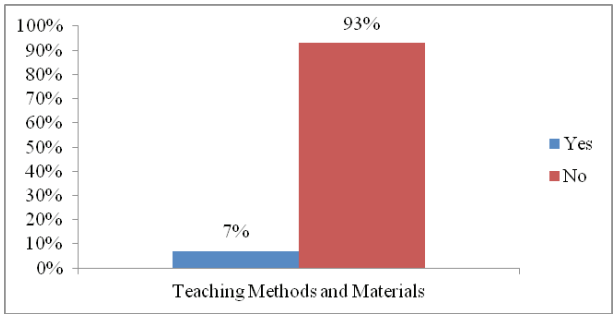

Figure 3: Awareness about Teaching Methods and Materials

Selection of appropriate teaching methods and materials are imperative in teaching learning process. It is important that teacher trainees must have some knowledge about the different methods and materials used for teaching students with disabilities. Adaptations in the curriculum, content, materials are important to teach students with disabilities for better understanding and conceptual thinking. It requires more efforts from the teachers to follow these strategies. Adaptation should be done based the unique

needs of special need children. Questions related to teaching methods, teaching materials, adaptations were asked to the samples. The results showed that very few prospective teachers (7%) have the knowledge about the materials and the remaining 93% of prospective teachers reported that they were not aware about the methods and materials to handle students with disabilities. The 7% of samples knew about the methods as they have visited one or two special schools as the part of curriculum.

Discussion based on awareness about assessment and evaluation of disability

Assessment and evaluation are the essential beginning step in the education process for a child with a disability. Initial assessment and evaluation is important before providing any kind of education to children. According to Individuals with Disabilities Education Act (IDEA, 1990) the purpose of conducting assessment and evaluation are to see if the child is a child with a disability, to gather information that will help determine the child's educational needs and to guide decision making about appropriate educational programming for the child. Teachers should know the basic aspects of assessment and evaluation procedures, which is helpful for them to understand the strengths, needs and problems of the children. The result shows that none of the prospective teachers were aware about the assessment, goal setting and preparation of individualized educational plan and evaluation techniques procedure for students with disabilities.

Discussion based on awareness about assistive technology and devices

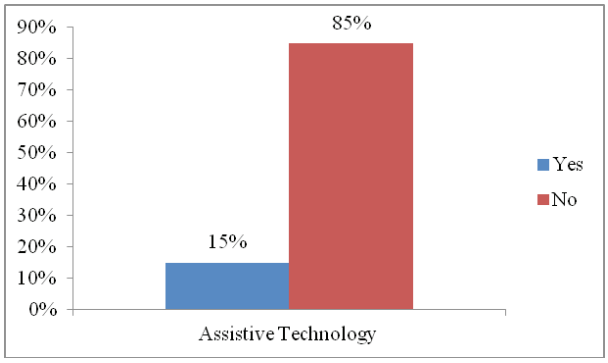

Figure 5: Awareness about the Assistive Technology and Devices

Assistive technology is any tool or device that helps students with disabilities to perform activities more quickly, easily or independently. Assistive technology devices enhance the participation of students with disabilities in the home, school and community. Teacher should have basic knowledge about assistive devices for different disabilities based on their needs and abilities. Five questions related to assistive technology were asked to the prospective teachers the results shows that only 15% were aware about the assistive technology and its uses. It shows prospective teachers should have the knowledge about the devices which are used for students with disabilities.

Discussion based on awareness about Government facilities & schemes

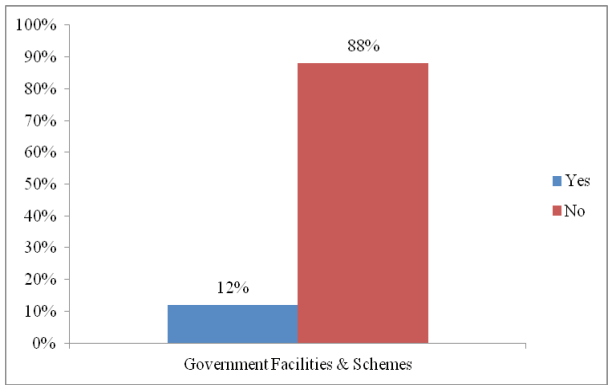

Figure 6: Awareness about Government Facilities & Schemes

Department of Empowerment of Persons with Disabilities, Ministry of Social Justice and Empowerment, Government of India announced various facilities and schemes for students with disabilities. Teacher should have the knowledge about some of the various schemes and facilities available for special children like scholarships, eligibility requirement, mode of applying, award of scholarship, children's educational allowance, railway travel concession, and other concessions. The result showed that only 12% of prospective teachers were aware about the ADIP (Assistance to Disabled Persons for Purchase / Fitting of Aids and Appliances) scheme and reservation policy and remaining 88% of them were not aware

about the facilities and schemes meant for students with disabilities.

Findings

The findings of this study are made based on the analysis. They are:

- Majority of the selected samples were aware about the knowledge about inclusive education.
- Very few were aware about the disability and its types.
- Countable numbers of answers were received from the prospective teachers about the various methods and materials used for students with disabilities.
- Prospective teachers were not aware about the assessment and evaluation procedure for students with disabilities.
- Majority of the samples were not aware about the meaning and use of assistive technology.
- Few samples were aware about the facilities and schemes meant for students with disabilities.

Educational Implications

- The study will help the policy makers to add more content related to disability in the teacher preparation programme.
- The study will help the prospective teachers to equip them in the area of disability and handling students with disabilities.

Conclusion

Inclusive education means that all children including children with disabilities are educated in regular classrooms. Through this inclusive education children with disabilities are able to participate in the community activities. It also provides better opportunities for learning. It helps them to independent in all their activities. A true inclusive education is possible only because of the teacher attitude and knowledge on the disability. The National Policy on Education (NPE, 1986) stated that teachers' training programmes will be reoriented, in particular for teachers of primary classes, to deal with the special difficulties of the handicapped children. In the draft National Educational Policy 2019, under inclusive education in teacher preparation mentioned that the inclusive education will be an integral part of both pre-service teacher education as well as in in-service professional development, including for Anganwadi workers, pre-school and school teachers, school leaders, and other education functionaries. These programmes will ensure that all teachers are continuously sensitised about different learners and hence will be able to cater to the educational needs of all learners. Based on the recommendations given by the various acts, the study results conclude that there is a significant need for providing content and training on disability in the curriculum of B.Ed. teacher trainees to handle students with disabilities.

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हिन्दी भाषा की कक्षा में 'क्रमविनिमेय' (Commutative) अवधारणा का शिक्षण

सार

पूर्ण संख्याओं के संदर्भ में क्रमविनिमेयिता (Commutativity) एक महत्वपूर्ण अंग है। साधारणत: कक्षा 6 से हीं क्रमविनिमेयिता का परिचय पूर्ण संख्याओं के योग और गुणा जैसी संक्रियाओं के उदाहरणों के ज़रिए कराया जाता है। इसे पढ़ाने और सीखने की प्रक्रिया में एक और आयाम भी जोड़ा जा सकता है- संधि की अवधारणा का प्रयोग। इस लेख में क्रमविनिमेयिता की अवधारणा को 'संधि' (हिन्दी व्याकरण की कक्षा) के संदर्भ में प्रस्तुत किया गया है। शिक्षक द्वारा संधि पढ़ाने के दौरान 'क्रमविनेमेयिता' की अवधारणा को भी साथ-साथ पढ़ाया जा सकता है या गणित की कक्षा में क्रमविनिमेयिता पढ़ाने के दौरान इसे संधि से जोड़कर भी समझाया जा सकता है। इस लेख में प्रस्तुत अवधारणाओं (ख़ासकर उदाहरण) को शिक्षक और विद्यार्थियों द्वारा क्रमविनिमेयिता पहचानने की एक गतिविधि के रूप में उपयोग किया जा सकता है।

प्रस्तावना

गणित के शिक्षण को लेकर प्राय: यह सुझाया गया है कि इसे कक्षा की बाहर की गतिविधियों से जोड़ा जाए, जैसे एक विद्यार्थी के दैनिक जीवन की गतिविधियों से। गणित शिक्षण को लेकर राष्ट्रिय फोकस समूह के आधार पत्र में भी गणित की अवधारनाओं को अन्य विषयों से भी जोड़कर पढ़ाने के सुझाव दिए गए हैं। इस लेख में एक ऐसा हीं प्रयास किया गया है कि गणित के शिक्षक या हिन्दी विषय के शिक्षक किस प्रकार अपनी कक्षाओं में पढ़ाए जाने वाली अवधारणाओं को एक दूसरे से जोड़ सकते हैं और विद्यार्थियों की अधिगम प्रक्रिया को प्रासंगिक और रोचक बना सकते हैं। गणित की प्राथमिक कक्षाओं (1-5) में विद्यार्थियों को पूर्ण संख्याओं और इनसे जुड़ी संक्रियाओं से अवगत कराया जाता है। जोड़, घटाव (व्यवकलन), गुणा और भाग (विभाजन) से संबंधित इन संक्रियाओं के बारे में जब विद्यार्थियों को बताया जाता है तो उन्हें इन संक्रियाओं से जुड़े गुणों के बारे में भी बताया जाता है। पूर्ण संख्याओं और इनके आपस में संक्रियाओं (जोड़ और गुणा) द्वारा तत्समक (Identity), क्रमविनिमेय (Commutative) और साहचर्य (Associative) जैसे गुणधर्मों से परिचित करवाया जाता है। छठी कक्षा में इन गुणधर्मों को विशेष रूप से पढ़ाया भी जाता है। इन गुणों में 'क्रमविनिमेयिता' एक महत्वपूर्ण गुण है, जिसके जरिए विद्यार्थियों को किसी संक्रिया में 'क्रम' की भूमिका का अधिगम कराया जाता है। पूर्ण संख्याओं के संदर्भ में क्रमविनिमेयिता का अर्थ है – किन्हीं दो पूर्ण संख्याओं को किसी भी क्रम में जोड़ने या गुणा करने पर समान परिणाम प्राप्त होना। इससे प्राप्त परिणाम (संख्या) पर कोई असर नहीं होता है। क्रमविनिमेयिता में 'ऑर्डर' प्रधान नहीं होता है, यानि क्रम का योगफल पर कोई प्रभाव नहीं होता है।

उदाहरण के लिए $4 + 5 = 9$, $5 + 4 = 9$

यदि 4 के बाद 5 जोड़ा जाए या 5 के बाद 4 जोड़ा जाए तो परिणाम 9 हीं प्राप्त होगा। वास्तव में जोड़ जैसी संक्रिया में क्रमविनिमेयिता एक महत्वपूर्ण गुणधर्म है जिसका आभास विद्यार्थियों को होना चाहिए, और इसके महत्व को संख्याओं के अलावा अन्य उदाहरणों के ज़रिए भी दर्शाना चाहिए। इस लेख का उद्देश्य ऐसे ही उदाहरणों को दर्शाना है जो हिन्दी भाषा और व्याकरण की कक्षा में पढ़ाए जा सकते हैं या गणित की कक्षा में हिन्दी भाषा के पाठ्यक्रम से उद्धृत की जा सकती है और उपयोग में लायी जा सकती है। हिन्दी व्याकरण और भाषा की कक्षा के संदर्भ में बात की जाए तो क्रमचयी गुणधर्म या क्रमविनिमेयिता की अवधारणा को 'संधि' पढ़ाने के दौरान सिखाया या एक्सप्लोर किया जा सकता है। साधारणत: हिन्दी की कक्षा में 'संधि' की पढ़ाई भी कक्षा 6 और 7 के स्तर से करायी जाती है। अत: इस स्तर पर क्रमविनिमेयिता और संधि की अवधारणाओं को एक दूसरे से संबन्धित कर पढ़ाया जा सकता है। जिस प्रकार दो पूर्ण संख्याओं के योग से एक अन्य पूर्ण संख्या या समान संख्या प्राप्त होती है, उसी प्रकार दो शब्दों या वर्णों के योग से एक शब्द या वर्ण प्राप्त होता है। हिन्दी व्याकरण के नियम के अनुसार इस नए शब्द का निर्माण पहले शब्द के अंतिम वर्ण और दूसरे शब्द के शुरुआती वर्ण के योग के आधार पर होता है।

उदाहरण - दिक् + गज = दिग्गज; नै + इका = नायिका

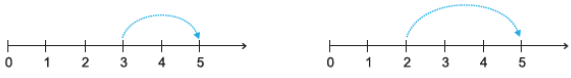
दिग्गज और नायिका जैसे शब्दों का निर्माण अन्य दो शब्दों या अक्षरों के योग से हुआ है। निर्माण करने वाले इन दोनों शब्दों में (जैसे – नै+ इका) में अन्य वर्ण छुपे हुये हैं। असल में दो वर्णों के योग के आधार पर नया शब्द प्राप्त हुआ है। हालाँकि, शब्दों/वर्णों के योग और पूर्ण संख्याओं के योग की संक्रिया या प्रक्रिया में अंतर है, पर इन प्रक्रियाओं को एक दूसरे

के समरूप (Analogous) मानकर विद्यार्थियों के बीच प्रस्तुत किया जा सकता है ताकि 'क्रम' की महत्ता, प्रधानता या निष्क्रियता का आभाष उन्हें हो सके। संधि के उदाहरणों में कई वर्णों का योग क्रमविनिमेयिता का अनुपालन करते हैं तो कई नहीं करते हैं। अत: पूर्ण संख्याओं से हटकर इस प्रकार का योग विद्यार्थियों को क्रमविनिमेयिता को परखने का एक नया दृष्टिकोण देता है। इन शब्दों (वर्णों) के योग की संक्रिया और लेख के आगे के भाग में विस्तार से चर्चा है। आगे बढ़ने से पहले 'क्रमविनिमेयिता' और संधि जैसे अवधारनाओं से परिचित होना जरूरी है।

क्रमविनिमेयिता

जैसा कि ऊपर वर्णन किया गया - जब दो पूर्ण संख्याओं की संक्रिया में क्रम बदलने पर युग्म के परिणाम पर कोई प्रभाव नहीं पड़ता है तब उन पूर्ण संख्याओं के लिए वह संक्रिया क्रमविनिमेय जानी जाती है। दो पूर्ण संख्याओं के योग या गुणन का परिणाम भी एक पूर्ण संख्या होती है। क्रमविनिमेयिता की अवधारणा को संक्रियाओं के संदर्भ में प्रस्तुत किया गया है -

जोड़/योग की संक्रिया- किन्हीं दो पूर्ण संख्याओं को जोड़िए, जैसे:



तस्वीर स्रोत: पृष्ठ 36, गणित की पाठ्य-पुस्तक, कक्षा 6, एन. सी. आर. ई. टी.

ऊपर तस्वीर से यह स्पष्ठ है कि पहले 3 कदम चलकर और इसके बाद 2 कदम चलकर हम 5 पर पहुँचते हैं। ठीक इसी प्रकार पहले 2 कदम चलकर, और फिर 3 कदम चलकर हम 5 पर पहुँचते हैं। अत: क्रम परिणाम को प्रभावित नहीं करता है।

गुणन की संक्रिया- किन्हीं दो पूर्ण संख्याओं को गुणा करिए, जैसे:। यहाँ इन दो संख्याओं के लिए गुणन की संक्रिया क्रमविनेमिय है। क्रम बदलने से गुणन के फल पर कोई असर नहीं होता है।

घटाव (अव्यव) की संक्रिया - यहाँ 4 - 2 = 2 लेकिन 2 - 4 = - 2। यहाँ 'घटाव' की संक्रिया में संख्याओं का क्रम बदलने के साथ परिणाम भी बदल गया। अत: यह 2 और 4 के लिए घटाव की संक्रिया क्रमविनेमिय नहीं है।

भाग (विभाजन) की संक्रिया - 4/2 = 2 लेकिन 2/4 = ½। यहाँ 2 और 4 के लिए भाग (विभाजन) की संक्रिया भी क्रमविनेमेय नहीं है। (**नोट:** यहाँ 0 से विभाजन का उदाहरण नहीं उल्लेख किया जा रहा है।)

अत: ऊपर दिये गए उदाहरणों में 'क्रमविनिमेयिता' की अवधारणा पर चर्चा की गई है और इन संक्रियाओं में पूर्ण संख्याओं के 'क्रम' की महत्ता को दर्शाया गया है।

संधि

ऊपर दिये गए उदाहरणों में पूर्ण संख्याओं की संक्रियाओं के अनुरूप वर्णों का संयोजन भी समझा जा सकता हैं। दो वर्णों के संयोजन (योग) में क्रमविनिमेयिता की अवधारणाएं ढूँढी जा सकती है। वर्णों के संयोजन या मेल को हिन्दी व्याकरण के संदर्भ में संधि कहा जाता है। संधि यानि जोड़ना - दो समीपवर्ती वर्णों के मेल से जो विकार (परिवर्तन) होता है वह संधि कहलाता है। इस संयोजन में पहले क्रम के शब्द के अंतिम अक्षर में मौजूद वर्ण और दूसरे क्रम के शब्द के पहले अक्षर में मौजूद वर्ण के योग से नए शब्द की रचना होती है। उदाहरण - देव + आलय - देवालय, जगत + नाथ - जगन्नाथ, मन: + योग - मनोयोग। हिन्दी व्याकरण में संधि के पहले वर्ण के आधार पर संधि के तीन भेद हैं – स्वर संधि, व्यंजन संधि और विसर्ग संधि।

स्वर : स्वतंत्र रूप से उच्चारण किए जाने वाले वर्ण स्वर कहलाते हैं या जिन ध्वनियों के उच्चारण के समय हवा बिना किसी रुकावट के निकलती है, वे स्वर कहलाते हैं, जैसे – अ, आ, इ, ई, उ, ऊ, (ऋ), ए, ऐ, ओ, औ, (ऑ)। यहाँ 'ऋ' उच्चारण की दृष्टि से स्वर नहीं है, पर लेखन की दृष्टि से स्वर है। परंपरागत रूप से स्वरों की संख्या 11 मानी जाती है (ऑ को छोड़कर)।

व्यंजन : जिन वर्णों का उच्चारण स्वरों की सहायता से किया जाए या जिन ध्वनियों के उच्चारण के समय हवा रुकावट के साथ मुँह के बाहर निकलती है, वे व्यंजन कहलाते हैं, जैसे – क, च, न, प, ब, य, ल, ह आदि।

मूल व्यंजन - क ख ग घ ङ; च छ ज झ ञ; ट ठ ड ढ ण; त थ द ध न; प फ ब भ म; य र ल व; श ष स ह

उत्क्षिप्त व्यंजन - ड़ ढ़

संयुक्ताक्षर व्यंजन - क्ष त्र ज्ञ श्र

देवनागरी लिपि में संयुक्ताक्षर व्यंजन भी अन्य व्यंजनों के संयोजन से प्राप्त हुये हैं, जैसे: क् + ष = क्ष, ज् + ञ = ज्ञ।

शब्दों का संयोजन

दो शब्दों के योग की प्रक्रिया में दो स्वरों का योग हो सकता है, दो व्यंजनों का योग या एक स्वर या एक व्यंजन का योग हो सकता है। जब विसर्ग (जैसे नि:, तप: आदि) के बाद किसी स्वर या व्यंजन का योग हो तो उसे विसर्ग संधि कहते हैं। दो स्वरों के योग का परिणाम एक स्वर के रूप में प्राप्त होता है। दो व्यंजनो के योग का परिणाम भी एक प्रकार का व्यंजन (बदला हुआ स्वरूप)। दो स्वरों के योग के परिणाम व्यंजनो के योग से भिन्न है। किसी व्यंजन का किसी स्वर या किसी व्यंजन के साथ योग का परिणाम सीधे-सीधे कोई वर्ण नहीं होता है बल्कि व्यंजनों का ही एक अन्य रूप होता है; जैसे:

क् का ग् होना - दिक् + विजय = दिग्विजय

त् का च् होना - उत् + चरित = उच्चरित

वि + सम = विषम

चूँकि व्यंजनों की संख्या 33-35 (कहीं 33 तो कहीं 35 माना जाता है) होती है, तो इनके आपस में संयोजन के परिणामों की संख्या की संभावनाएं भी काफी अधिक हैं। हिन्दी व्याकरण के नियमों के अनुसार अलग-अलग व्यंजनो के साथ योग के विभिन्न नियम सुझाए गए हैं अत: इनके योग और युग्म का अध्ययन थोड़ा जटिल भी है। कुछ इसी प्रकार के नियम विसर्ग संधि में हैं। वहीं स्वरों के योग के नियम इनकी तुलना में काफी सरल हैं। व्यंजनों की तुलना में स्वरों की संख्या (11) काफ़ी कम है और साथ ही साथ पूर्ण संख्याओं की भाँति स्वरों का योग 'क्रमविनिमेयिता' के उदाहरण के लिए अनुकूल बैठता है। अत: इस लेख में स्वर संधि पर चर्चा किया गया है।

स्वर संधि: स्वर के बाद स्वर यानि दो स्वरों के मेल (संयोजन) से जो वर्ण प्राप्त होता है, स्वर संधि कहलाता है।

हिन्दी व्याकरण के अनुसार स्वर संधि के पाँच प्रकार होते हैं - दीर्घ संधि, गुण संधि, वृद्धि संधि, यन संधि और अयादी संधि।

दीर्घ संधि में स्वरों का योग आ, ई, ऊ के रूप में परिवर्तित होता है। गुण संधि में स्वरों का योग अ, ए,ओ के रूप में प्राप्त होता है।

वृद्धि संधि में स्वरों का योग ए, औ के रूप में, यण संधि में स्वरों का योग य, र, ल, व के रूप में तथा अयादी संधि में स्वरों का योग अय, आय,अव, आव, आवु, आवि, अवी के रूप में परिवर्तित होता है।

स्वर संधि में क्रमविनिमेयिता की अवधारणा

दीर्घ संधि: ह्रश्व (अ, इ, उ) या दीर्घ स्वर (आ, ई, ऊ) के पश्चात क्रमश: कोई ह्रश्व या दीर्घ स्वर आए तो दीर्घ स्वर प्राप्त होता है।

स्वरों की संक्रिया	प्राप्त वर्ण/शब्द	उदाहरण
अ + अ	आ	स्व + अर्थी = स्वार्थी, देव + अर्चन = देवार्चन
अ + आ	आ	देव + आलय = देवालय, सत्य + आग्रह = सत्याग्रह
आ + अ	आ	परीक्षा + अर्थी = परीक्षार्थी, रेखा + अंश = रेखांश
आ + आ	आ	महा + आत्मा = महात्मा, विद्या + आलय = विद्यालय
इ + इ	ई	कवि + इंद्र = कवींद्र, रवि + इंद्र = रवींद्र
इ + ई	ई	गिरि + ईश = गिरीश, परि + ईक्षा = परीक्षा
ई + इ	ई	मही + इंद्र = महींद्र, योगी + इंद्र = योगींद्र
ई + ई	ई	रजनी + ईश = रजनीश, योगी + ईश्वर = योगीश्वर
उ + उ	ऊ	भानु + उदय = भानूदय, लघु + उत्तर = लघूत्तर
उ + ऊ	ऊ	साधु + ऊर्जा = साधूर्जा, सिंधु + ऊर्मि = सिंधूर्मि
ऊ + उ	ऊ	भू + उत्सर्ग = भूत्सर्ग, वधू + उपकार = वधूपकार
ऊ + ऊ	ऊ	सरयू + ऊर्मि = सरयूर्मि, भू + ऊर्जा = भूर्जा

गुण- संधि - यदि 'अ' और 'आ' के बाद 'इ' या 'ई', 'उ' या 'ऊ' और 'ऋ' आए तो क्रमश: 'ए', 'ओ' और 'अर' प्राप्त होते हैं।

स्वरों की संक्रिया	प्राप्त वर्ण/शब्द	उदाहरण
अ + इ	ए	नर + इंद्र = नरेंद्र, सुर + इंद्र = सुरेंद्र
अ + ई	ए	नर + ईश = नरेश, परम + ईश्वर = परमेश्वर
आ + इ	ए	रमा + इंद्र = रमेंद्र, राजा + इंद्र = राजेंद्र
आ + ई	ए	महा + ईश = महेश, राका + ईश = राकेश
अ + उ	ओ	मानव + उचित = मानवोचित, पर + उपकार = परोपकार
अ + ऊ	ओ	सूर्य + ऊर्जा = सूर्योर्जा, जल + ऊर्मि = जलोर्मि
आ + उ	ओ	महा + उदय = महोदय, महा + उत्सव = महोत्सव
आ + ऊ	ओ	दया + ऊर्मि = दयोर्मी, महा + ऊष्मा = महोष्मा
अ + ऋ	अर्	देव + ऋषि = देवर्षि, सप्त + ऋषि = सप्तर्षि
आ + ऋ	अर्	महा + ऋषि = महर्षि

वृद्धि संधि - 'अ' या 'आ' के बाद 'ए' या 'ऐ' आए तो दोनों के मेल से 'ऐ' हो जाता है तथा 'अ' और 'आ' के पश्चात 'ओ' या 'औ' आए तो दोनों के मेल से 'औ' हो जाता है।

स्वरों की संक्रिया	प्राप्त वर्ण/शब्द	उदाहरण
अ + ए	ऐ	एक + एक = एकैक, लोक + एषणा = लोकैषणा
अ + ऐ	ऐ	मत + ऐक्य = मतैक्य, धन + ऐश्वर्य = धनैश्वर्य
आ + ए	ऐ	सदा + एव = सदैव, तथा + एव = तथैव
आ + ऐ	ऐ	महा + ऐश्वर्य = महैश्वर्य, रमा + ऐश्वर्य = रमाईश्वर्य
अ + ओ	औ	वन + ओषधि = वनौषधि, दंत + ओष्ठ = दंतौष्ठ

अ + औ	औ	परम + औषध = परमौषध
आ + ओ	औ	महा + ओजस्वी = महौजस्वी, महा + ओज = महौज
आ + औ	औ	महा + औषध = महौषध

यण-संधि - 'इ' या 'ई', 'उ' या 'ऊ' और 'ऋ' के बाद भिन्न स्वर आए तो क्रमश: 'य', 'उ' और 'ऊ' का 'व' तथा 'ऋ' का 'र' होता है।

स्वरों की संक्रिया	प्राप्त वर्ण/शब्द	उदाहरण
इ + अ	य	अति + अधिक = अत्यधिक, यदि + अपि = यद्यपि
इ + आ	या	इति + आदि = इत्यादि, अति + आचार = अत्याचार
इ + उ	यु	उपरि + उक्त = उपरयुक्त, अति +उत्तम = अत्युतम
इ + ऊ	यू	नि + ऊन = न्यून
इ + ए	ये	प्रति + एक = प्रत्येक, अधि + एषणा = अध्येषणा
ई + आ	या	देवी + आगमन = देव्यागमन
ई + ऐ	यै	नदी + ऐश्वर्य = नद्यैश्वर्य
उ + अ	व	सु + अच्छ = स्वच्छ, अनु + अय = अन्वय
उ + आ	वा	सु + आगत = स्वागत, मधु + आलय = मध्वालय
उ + इ	वि	अनु + इति = अन्विति
उ + ए	वे	प्रभु + एषणा = प्रभ्वेषणा, अनु + एषण = अन्वेषण
उ + ओ	वो	गुरु + ओदन = गुर्वोदन
ऊ + आ	वा	भू + आदि = भ्वादी
ऋ + अ	र	पितृ + अनुमति = पितृनुमति
ऋ + आ	रा	मातृ + आज्ञा = मात्राज्ञा, पितृ + आज्ञा = पित्राज्ञा
ऋ + इ	रि	मातृ + इच्छा = मातृच्छा

अयादि संधि - स्वर 'ए', 'ऐ', 'ओ', 'औ' स्वरों का मेल दूसरे स्वरों से हो तो 'ए' का 'अय', 'ऐ' का 'आय', 'ओ' का 'अव' तथा 'औ' का 'आव' के रूप में परिवर्तित हो जाता है।

स्वरों की संक्रिया	प्राप्त वर्ण/शब्द	उदाहरण
ए + अ	अय	ने + अन = नयन, शे + अन = शयन
ऐ + अ	आय	नै + अक = नायक, गै + अक = गायक
ऐ + इ	आयि	नै + इका = नायिका
ओ + अ	अव	पो + अन = पवन
ओ + इ	अवि	पो + इत्र = पवित्र
ओ + ई	अवी	गो + ईश = गवीश
औ + अ	आव	पौ + अन = पावन
औ + इ	आवि	नौ + इक = नाविक
औ + उ	आवु	भौ + उक = भावुक

प्रस्तुत तालिका के जरिए विद्यार्थियों को दो स्वरों के योग की प्रक्रिया और इस युग्म के परिणाम को 'क्रमविनिमेयिता' के संदर्भ में पेश किया जा सकता है। इस तालिका से तीन प्रकार के युग्मों की प्राप्ति होती है:

1. वर्णों का युग्म जो क्रमविनिमेयिता का अनुपालन करता है
2. वर्णों का युग्म जो क्रमविनिमेयिता का अनुपालन नहीं करता है
3. वर्णों ऐसा युग्म जिनके योग का क्रम एक ही प्रकार का है (क्रम का आदान-प्रदान नहीं हुआ हो)

वर्णों का योग जो क्रमविनिमेयिता का अनुपालन करता है

अ + आ = आ, आ + अ = आ; इ + ई = ई, ई + इ = ई; उ + ऊ = ऊ, ऊ + उ = ऊ

वर्णों का योग जो क्रमविनिमेयिता का अनुपालन नहीं करता है –

अ + इ = ए, इ + अ = य; आ + ई = ए, ई + आ = या; अ + उ = ओ, उ + अ = व; आ + उ = ओ, उ + आ = वा;

अ + ए = ऐ, ए + अ = अय; आ + इ = ए, इ + आ = य; ऋ + अ = र, अ + ऋ = अर्; ऋ + आ = रा, आ + ऋ = अर्

तालिका में वर्णों का ऐसा युग्म भी है जिनका क्रम एक ही प्रकार का है (क्रम का आदान-प्रदान नहीं हुआ हो) –

अ + अ = आ, आ + आ = आ, इ + इ = ई, ई +ई = ई, उ + उ = ऊ, ऊ + ऊ = ऊ, अ + ई = ए, अ + ऊ = ओ,

आ + ऊ = ओ, अ + ऋ = अर्, आ + ऋ = अर्, अ + ऐ = ऐ, आ + ए = ऐ, आ + ऐ = ऐ, अ + ओ = औ,

अ + औ = औ, आ + ओ = औ, आ + औ = औ, इ + उ = यु, इ + ऊ = यू, इ + ए = ये, ई + ऐ = यै, उ + इ = वि,

उ + ए = वे, उ + ओ = वो, ऋ + इ = रि, ऐ + अ = आय, ऐ + इ = आवि, ओ + अ = अव, ओ + इ = अवि,

ओ + ई = अवी, औ + अ = आव, औ + इ = आवि,

औ + उ = आवु

स्वर संधि से प्राप्त वर्ण हिन्दी व्याकरण के नियम के अनुसार पहले से ही निर्धारित किए हुए हैं, अत: इनमें हम स्वरों का युग्म घटा-बढ़ा नहीं सकते या कोई नया संयोजन नहीं बना सकते। उदाहरण के लिए – स्वर संधि के विभिन्न उदाहरणों में तालिका में 'उ + ओ' का संयोजन तो उल्लेखित है पर 'ओ + उ' का संयोजन कहीं उल्लेखित नहीं है। चूंकि ऐसे योग के कोई शब्द नहीं हैं या इनके संयोजन से रचित होने वाले शब्दों की जरूरत नहीं पड़ी, ऐसे स्वरों के युग्म के संयोजन का परिणाम मालूम नहीं है। क्रमविनिमेयिता की परख करने के लिए दो वर्णों के संयोजन या दो

संख्याओं के योग की संक्रिया में क्रम का आदान-प्रदान होना जरूरी है। जब क्रम का आदान-प्रदान होगा तभी एक युग्म के दो प्रकार प्राप्त होंगे और इन युग्मों की क्रमविनिमेयिता पर विचार किया जा सकता है। अत: ऐसे युग्मों को क्रमविनिमेयिता के अवधारणाओं से जोड़कर देखना उचित नहीं होगा। पहले और दूसरे प्रकार के युग्म और उनके संयोजन से निर्मित शब्द क्रमविनिमेयिता की अवधारना को दर्शाने के लिए उपयोग में लाये जा सकते हैं।

निष्कर्ष

स्वरों का संयोजन ऐसे उदाहरण भी सामने लाता है जो क्रमविनिमेय नहीं है। ऐसे विरोधाभासी उदाहरण अवधारणाओं के अधिगम को और प्रबल बनाते हैं। नियम के अनुसार जिन स्वरों और जिनके संधि पर चर्चा की गयी है, उनके परिणाम क्रमविनिमेयिता के संदर्भ में उपयोग किए जा सकते हैं और विद्यार्थियों के सामने क्रमविनिमेयिता का एक नया आयाम पेश किया जा सकता है। लेख में प्रस्तुत तालिका में स्वरों के संयोजन के परिणामों के जरिए विद्यार्थियों को क्रमविनिमेयिता के उदाहरण ढूँढने की एक गतिविधि में शामिल किया जा सकता है। ऐसा करने से विद्यार्थी हिन्दी भाषा और व्याकरण (विशेष कर शब्द रचना) का ज्ञान गणित की कक्षा में उपयोग में ला सकते हैं।

संदर्भ

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Training in Effective use of Vision in Students with Low Vision

Abstract

Vision is the primary sensory input. About 80% of learning takes place through the visual system (State-wide Vision Resource Centre). Vision is responsible for seeing the world and is also the unifying sense allowing sighted people to integrate their sensory experiences. At three months of age vision is the lead sensory modality and at six months it is the primary source of information about the environment. A huge number of children with visual impairment have some degree of residual vision. The amount of residual vision varies greatly among individuals. It is very important to encourage the person with low vision to use his/her residual vision at maximum level. Functional Vision refers to the way in which the person uses whatever vision he or she has. Systematic training will enhance the functional vision of individuals with low vision.

Keywords: *Functional Vision, Students with Visual Impairment, Visual Impairment*

Introduction

Vision is a cognitive act which enables us to look at an object and not only identify it but to determine where it is, its size and distance from the observer, its rate of movement its texture and everything else that can be determined by visual inspection. Eyesight which involves the sensory ability of the eye to distinguish small details is only one component of vision (Gibson, 1950).

Visual impairment refers to a significant loss of vision in both eyes, which cannot be corrected with glasses. Based on the degree of loss of vision, visual impairment is classified into two types.

1. Blindness means a condition where a person has any one of the following conditions, after best correction
   - total absence of sight; or
   - visual acuity less than 3/60 or less than 10/200 (Snellen) in the better eye with best possible correction; or
   - limitation of the field of vision subtending an angle of less than 10 degree. (RPWD Act, 2016).
2. Low-vision means a condition where a person has any one of the following conditions, namely:
   - visual acuity not exceeding 6/18 or less than 20/60 upto 3/60 or upto 10/200 (Snellen) in the better eye with best possible corrections; or
   - limitation of the field of vision subtending an angle of less than 40 degree up to 10 degree. (RPWD Act, 2016).

Approximately 90% of the visually impaired population live in developing countries or low-income circumstances, and about 80% of all visual impairment worldwide can be prevented, treated, or cured with proper access to eye care (NCBI). According to World Health Organization report globally in the year 2017, there is an estimated a population of 253 million people live with vision impairment: 36 million are blind and 217 million have moderate to severe vision impairment. 81% of people who are blind or have moderate or severe vision impairment are aged 50 years and above. Globally, chronic eye diseases are the main cause of vision loss. Uncorrected refractive errors and then

un-operated cataract are the top two causes of vision impairment. Un-operated cataract remains the leading cause of blindness in low and middle income countries. The prevalence of infectious eye diseases, such as trachoma and onchocerciasis have reduced significantly over the last 25 years. Over 80% of all vision impairment can be prevented or cured.

Explanation of Various Terms Related to Visual Impairment

- Visual Acuity refers to the ability to discriminate high contrast, fine details at distance, the sharpness and clarity of vision.
- Visual field means the total area seen when looking straight ahead without moving the eyes or head.
- Visual Functioning refers to ability of a person to use vision for all activities.
- Loss of visual acuity leads to an inability of the person to see objects as clearly as a healthy person
- Loss of visual field leads to inability of an individual to see as wide an area as the average person without moving the eyes or turning the head (Mandalet al, 2013).

Characteristics of Students with Low Vision

1. All people with low vision have residual vision.
2. For Individuals with low vision print materials should be magnified, contrast enhanced, or type of font or size changed (Turnbull et al., 2002).
3. Individuals with low vision find difficulty in seeing details in any kind of pictures because of colour, contrast and brightness. Students in this category characteristically work more slowly and have difficulty in working with details (Barraga et al., 1992).
4. Adaptations may vary from one individual to another individual.
5. Many individuals with low vision can use normal print for reading and learning. But some students need optical devices and non-optical devices to read and write.
6. Some students can move independently in the environment but for a few students, it is very difficult to move around.
7. Most of the individuals with low vision face difficulty in reading and copying from blackboard. In this regard students are benefitting with the help of optical devices.
8. Students with Low Vision have some amount of vision that can be used for execution of certain tasks.

Common Causes of Visual Impairment

Based on the onset of visual impairment, it is divided into two categories that is congenital vision loss which occurs during birth and adventitious vision loss that occurs later in life as a result of a degenerative condition, illness or accident.

Macular Degeneration

A degenerative condition affects the central part of the retina that is the macula and resulting in distortion or loss of central vision.

Diabetic Retinopathy

It is a diabetes complication that affects eyes. It is caused by damage to the blood vessels of the light-sensitive tissue at the back of the eye i.e. retina.

Retinitis Pigmentosa

It is a genetic disorder of the eyes that causes loss of vision. Symptoms include difficulty in seeing at night and decreased peripheral vision (side vision).

Amblyopia

The visual system fails to develop normally during childhood. The blur vision is the result of Amblyopia either in one eye or in both the eyes.

Retinopathy of Prematurity (ROP):

It is an eye disease that can happen in premature babies. It causes abnormal blood vessels to grow in the retina, and can lead to blindness.

Retinal Detachment

It is a disorder of the eye in which the retina separates from the layer underneath. It leads to total vision loss.

Cataract

It is the clouding of the eye's natural lens. Due to clouding in lens light cannot reach the retina at the back of the eye which leads to loss of vision.

Glaucoma

It is a condition that damages eye's optic nerve. It occurs due to increase of internal pressure in the eye because of drainage of fluid within the eye. It leads to peripheral vision loss and difficulty in night vision.

Functional Vision and Assessment

Functional vision refers to the way in which an individual uses whatever vision he or she has. Functional vision has been defined as vision that can be used to perform day to day activities (Gothwal et al., 2003). Functional vision means how the eyes and the visual system functions and how the person functions in vision-related activities (Colenbrander, 2010). It is the ability of a person to use their remaining vision effectively. The amount of functional vision varies greatly among individuals. Common requirement of students with low vision is instruction to use their vision efficiently. For a student with a field loss, it might be viewing print eccentrically to maximize clear perception of the print. For another student it might be paying attention to objects in their peripheral field when walking to get as much advance warning of impending obstacles as is possible. In either case, the remaining vision that is present in the defective eye and that allows any sight possible is called as functional vision. Functional vision is the way in which an individual uses whatever vision he or she has for doing any kind of task.

Persons with visual impairment can learn to make better use of their residual vision and we need to encourage them to do so. Functional vision depends on a person's experiences and training and can vary with different conditions. Any remaining sight, no matter how little, by using that vision can add to his/her experience, enjoyment and learning about the world.

Functional vision assessment is a crucial skill those who are handling students with visual impairment because it helps them to predict and plan for appropriate intervention for learners with low vision (Jose, 1985).

The purpose of assessment of functional vision is to determine the current level of visual functioning which can be used for educational tasks, independent mobility, social contact and independent living skills. The functional vision assessment includes a variety of evaluation that test the child's use of residual vision in daily activities. Following items are involved in functional vision assessment.

1. **Near and Distance Acuity:** An acuity measurement is taken at near range using a near vision acuity chart. This measurement is often recorded in print size. Distance visual acuity is typically measured at a distance of feet or meter. A distance tasks may include the distance at which the child can see print on the white board, chart and seeing hand from the

distance. The assessment report should include examples of environmental features such as faces, signs and travel cues the child can see and what distance the child can see each feature.

2. **Peripheral Visual Field:** Peripheral vision is the ability to see movement or objects outside of the immediate line of vision. Field loss is measured in degrees.
3. **Reading Level and Speeds:** An informal reading inventory indicates the grade level at which a child is reading as well as how fast she/he is reading in comparison to her/his peers.
4. **Current Print Functioning:** The functional vision assessment should state the child's primary mode of reading, whether it is regular print, large print, optical devices or Braille.
5. **Light Sensitivity:** Light sensitivity has implications for how the student performs in a variety of illuminated settings. Children with diagnoses such as albinism or achormatopsia are significantly affected by higher levels of illumination and often perform tasks better under less illumination. There are also visual conditions for which additional lighting is necessary. For a majority of visual conditions, glare will adversely affect visual functioning.
6. **Colour Perception**: Colour perception is the ability to perceive differences in colour.
7. **Convergence**: Convergence is the necessary inward movement of the eyes in order to focus on a near object.
8. **Eye Movements:** Eye movements of student refer to the ability to track a moving object in vertical, horizontal, oblique and circular directions.
9. **Eye Preference**: Eye preference is a term used to describe the eye a person prefers to use for accessing his/her visual environment.
10. **Muscle Balance**: Muscle balance is a term used to describe the alignment of the eyes and how they move together. Proper alignment is needed for the eyes to work together and proper muscle balance is essential for the ability to converge.
11. **Binocular Vision**: Binocular vision is a person's ability to perceive three dimensional depth by fusing the images of each eye.
12. **Depth Perception:** Differentiate an object's solidity and its position in space related to other object is called as depth perception.

Training to enhance Functional Vision

Functional vision training helps the person in day today activities. Even slight vision can be useful to the person. Systematic training will enhance the functional vision of individuals with low vision.

Vision Stimulation is the most important aspect in the training of use of vision. Vision stimulation means helping a person to develop maximal use of his/her residual vision. The children who have very little vision, or those who have not used it, need to know that they can use their vision. It may mean teaching a low vision person to use visual mode of learning instead of tactual mode. Vision stimulation enhances the level of visual awareness and efficiency. The aim of vision stimulation training is to provide appropriate visual stimulation activities in a particular order and sequence, which will help the person to use his limited visual ability to the best. Since the persons with low vision may have very limited experience in looking at things visually, learning to use one's vision may initially be a tiring experience or an unpleasant activity for most. So the selection of visual stimulation activities should be appropriate, attractive, interesting, motivating and enjoyable. It is also important to know that eyes do not get damaged by using vision or holding things close to the eyes.

The extent to which vision is used is called visual functioning. Visual functioning

skills allow people with visual impairment to gather information from their experiences, which they use to interpret their immediate surroundings and to apply in other circumstances. According to Corn (1989), visual functioning skills help students gain information from directed, as well as incidental, experiences and aid them in planning and carrying out tasks.

Importance of functional vision assessment

1. It helps to determine the current visual functioning level of the person.
2. It helps to determine the extent of visual stimulation and instruction needed to help the person make optimum use of the remaining vision.
3. It enables the person to use his limited vision to the highest potential.
4. It helps to plan the person's mobility training programme.
5. It helps in decisions regarding the use of visual stimulation materials.
6. It helps to decide upon the nature of the primary reading medium.
7. It enables one to decide on the type of devices needed by the person.

Functional Vision Training Activities

The functional vision training activities are helpful to students with low vision between the age group of 8-18 years of old to use their residual vision at maximum level (Gothwal et al, 2003).

Fifteen activities are given below to improve the residual vision of students with low vision.

1 **Visual Awareness:** It refers to the ability of the child to identify the objects present in the visual field. Example: Asking the child to identify the object which is present in front of the eyes of the child.

2 **Visual Attention**: It refers to the ability of the child to attend the objects with sound in front of the child. Example: Getting attention from the child using rattle ball.

3 **Visual Fixation:** The ability of the child to fix the eyes on the moving object. Example: Asking the child to fix eye sight on particular object.

4 **Visual Focus:** The ability of the child to focus the object at various distances. Example: Asking the child to focus the object present at various distances (1 m to 3 m distance).

5 **Visual Fusion:** The ability of the child to see the two dissimilar objects as one. Example: Asking the child to use his eyes to see only one object.

6 **Visual Tracking:** This refers to the child's ability to follow a moving object with his eyes. Example: Asking the child to track the object with eyes. It means if teacher is rolling the ball on the floor, the student should follow that moving object.

7 **Visual Scanning:** This refers to the child's ability to search for a particular object among other objects. Example: Asking the child to pick one object among other objects.

8 **Visual Discrimination:** This refers to the child's ability to distinguish different objects on the basis of their colour, shape or size. Example: Asking the child to differentiate the shapes among other shapes.

9 **Visual Figure Ground Discrimination:** This refers to the child's ability to isolate a particular object or a picture from the background. Example: The child is given a picture and asked to circle a particular part in the picture.

10 **Visual Memory:** This refers to the child's ability to store and recall the past experiences and integrates them with new ones or ability of the child to recall the objects which is seen before ten minutes. Example: The child is asked to recall the object which is seen earlier.

11 **Visual Closure:** This refers to the child's ability to perceive a total picture or object when a part is visible/available. Exam-

ple: Recognize the picture while part of the picture is missing.

12 **Visual Spatial Relations:** This refers to the child's ability to identify spatial concepts like directions, distance etc. Example: Ask the child to show the pictures which are present in right, left, up, down directions of the particular picture.

13 **Eye Hand Coordination:** The ability to perform a task using our hands and eyes in coordination is referred as eye-hand coordination. Example: Asking the child to trace the lines using finger on the line in a given picture.

14 **Eye Foot Coordination:** This refers to the child's ability to perform a task using eyes and foot in harmony. Example: Asking the child to step on the circle markings drawn on the floor.

15 **Form Constancy:** This refers to the child's ability to perceive the same object at different positions. Example: Ask the child to identify a picture showing an object in different positions.

Conclusion

Functional vision training is full of vision related activities. Through these activities functional vision can be developed among the students with Low Vision by improving the residual vision. So, due importance should be given to improve the functional vision of students with low vision to read, to write in academic and to do daily tasks independently.

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Perception of Creativity among Secondary Level Mathematics Teachers: A Qualitative Analysis

Abstract

Children are the future of a nation and creative thinking is an investment in a country's future. It influences almost all human activities. Hence, the teachers must understand and appreciate the importance of creative thinking and apply it in their teaching. The present paper was developed to gain an insight into the perception of secondary school mathematics teachers about creativity in mathematics. All the teachers agreed that creativity is important for teachers and the students. However, the data show a real picture of their knowledge and use of creativity in the classroom. Approximately 10 teachers, 5 U.P. board teachers, and 5 CBSE board teachers of Varanasi district participated and shared their viewpoint on mathematical creativity. For most of them, creativity in mathematics is only confined to the use of teaching aids and models. Their responses also show which of the activities they adopted by them in their teaching were considered being creative by them.

Introduction

Everything in our nature, like, the sun, moon, planets, stars, rivers, clouds, birds, animals, human beings, etc. are unique creations. Human beings are the special ones with certain rare qualities that are not found in any other creation. Creativity is one of such inborn quality of human beings. It is present in our everyday life and a man uses his creative ability while solving his practical life problem (Pehkonen, 1997). Looking at its importance it was recognized as the "cultural capital" of the twenty-first century (Sheriden-Rabideau, 2010 cited in Hirsh, 2010). It is also said that policy makers have recognized the importance of creative thinking like an investment in their country's future (Craft, 2007 cited in Kattou et al., 2009). However, the development of a nation depends on the quality of its education. Creativity is one of the media in the development of the quality of education. However, the development of creativity among school students is the responsibility of a teacher. Hence, they need creative practice to foster creativity among students. But, at first, they need to understand the meaning and importance of creativity.

Creativity

Vygotsky's (1930/1984) has argued that creativity (imagination in Vygotsky's term) is the tool by which new knowledge can be developed (Lev-Zamir & Leikin, 2011). The word "creativity" came into prominence in education after the presidential address of J. B. Guilford in the year 1950. Guilford discussed two types of thinking. Convergent thinking that aims towards the production of a single correct solution to a problem and divergent thinking attempting multiple solutions to a problem or phenomenon (Leikin, 2009). Guilford connected divergent thinking with creativity. After that many definitions have been proposed for creativity. For instance, creativity is the ability of a person to produce novel and previously unknown

compositions, products or ideas (Drevdahl, 1956). Creativity is the process of creating something new which must contribute to the solution of some problems (Wilson, Guilford, & Christenen, 1974). Runco (1993) described creativity as a creation involving both convergent and divergent thinking. For Alfuhaigi creativity is the phenomenon of cognitive development used by every person to solve problems encountered by them in a unique unfamiliar way (Alfuhaigi, 2015). Hence, it can be concluded that creativity is the application of divergent thinking to produce something original, may be ideas or composition or products along with unique solving ways of problems. Stenberg and Lubart (1995) investment theory of creativity states that creative thinkers buy low and sell high in the world of ideas just like the investors of the world of finance. And all the people in the world are more or less creative thinkers and creativity is a part of our daily life (Pehkonen, 1997). Most of the research on creativity leads to one of the two directions that are eminent creativity (also called "Big-C"), which is original work of great persons and everyday creativity (also called "little-c") which is based on the assertion that everyone can be creative (Kaufman, 2007). Creativity is not limited to some specific people and it can be taught and developed (Alfuhaigi, 2015).

Creativity and Mathematics:

Mathematics is used by the people, not from today but the Vedic period onwards. When people in the Vedic period felt the need to measure the number of things, time, and weight of the thing which they used in their daily life, they started calculations. These calculations were given the name mathematics as we know today. Hence, we can say that mathematics is related to calculations used for solving life problems (Yadav, 2015). Since it is important for human life it is taught in schools. Just like physical exercise is necessary for the body, mental exercise is necessary for the mind. And mathematics is that mental exercise for the students. It has the quality to develop the mental ability, problem-solving ability, abstract thinking, reasoning skills, creative thinking, and real mathematical activity has a strong correlation with creativity (Silver, 1997) because creativity is an essence of mathematics (Mann, 2006). Creativity ensures the growth of mathematics in totality (Sriraman, 2004). Mathematics involves challenging tasks that call for creative thinking (Vale and Barbosa, 2015). The essence of mathematics lies in thinking creatively, not merely getting the correct answer (Ginsberg, 1996 as cited in Vale and Barbosa, 2015).

Literature review reveals many ways to define this mathematical creativity or creativity in mathematics like creativity is a three-stage process of the preliminary, algorithmic and non-algorithmic stage and defined non-algorithmic stage as a creative stage (Ervynck, 1991). Sriraman (2005) presented seven levels of mathematical creativity and viewed mathematical creativity from two perspectives. At the professional level, it is original work that adds the body of knowledge and at the school level, it is related to the insight gained while solving problems. Creativity in mathematics is associated with problem-solving (Silver, 1997; Runco, 1993) and problem-posing (Pehkonen, 1997) and divergent (Runco, 1993; Levenson, 2013) and flexible thinking which open up different perspectives in solving a problem. According to Sriraman (2004), mathematical creativity is the ability to produce original work. Krutetskii (1976) considered mathematical creativity as problem finding, invention, independence, and originality. Haylock argued that mathematical creativity means mathematics and creativity (Lev-Zamir & Leikin, 2011). In general, originality, fluency, flexibility and elaboration, components of creativity are employed in each human activity (Torrance, 1974; Guilford, 1968). In line with this, some researchers applied the concept of originality, fluency, flexibility, and elaboration proposed by Torrance (Silver, 1997; Leikin, 2009) to the concept of mathematical creativity.

Mathematical Creativity and Mathematics Teachers

Creativity is the outcome related to cognitive abilities such as knowledge, aptitude, and approach (Stenberg & Lubart, 1995). Creativity is the product of the interaction between the individual, the system s/he is engaged and the surrounding social system (Feldman, et al., 1994). The modern educational system has shifted the static view of creativity as an unchanged personal trait to a dynamic view of creativity that can be developed by a person (Silver, 1997). This trend leads to the importance of developing creativity in every teacher (Lev-Zamir & Leikin, 2011) as a teacher cannot teach creatively and teach for creativity unless s/he is creative her/himself. Teacher training courses are aimed to bring excellence in mathematics teaching among the trainees. These courses seek to make the aware of teachers' personal and professional quality needed by a teacher as well as child psychology. Courses meant to provide information about the various techniques and strategies to deal with an inclusive classroom to the pre-service teachers. Courses intend to give the knowledge of innovative lesson plans in mathematics to the pre-service teachers to increase and sustain the interest of the class. It is also expected from the training courses to give information about the correlation of mathematics with daily life activities like home, school, college and recreational activities like puzzles, riddles, games, crosswords. Courses offer the trainees to make their teaching-learning material and also make them familiar with various evaluation techniques. Along with these, trainees get the real classroom experience where they teach using these learned techniques and strategies. Since teacher training courses are designed to include these activities, it can be said that teacher trainees are supposed to get opportunities to develop their creative abilities in the training institutes.

Teachers' Perspectives on Creativity in Mathematics

Several studies have been devoted, to know the teachers' views on creativity in mathematics teaching. Lev-Zamir and Leikin (2011) developed a model to describe and analyze the conceptions of creativity of teachers' in mathematics teaching. They found two types of teachers' conceptions of teaching mathematics: one is teacher-directed that is creativity in teaching is a teacher's act who makes his/her teaching creative and the other one is student-directed which means creativity in mathematics teaching is opportunities provided to the students for the development of their creativity. Leikin et al. (2013) has done an international survey to explore the secondary school mathematics teachers' conceptions of creativity in the mathematics classroom and found some variables of mathematical creativity to be culturally dependent and others to be intercultural. Bolden et al. (2010) explored pre-service primary teachers' conception of creativity in mathematics and revealed that their conceptions were limited to teaching creativity rather than teaching for creativity. Lithner (2008) analyzed classroom mathematical activities through the lens of creativity in opposition to imitation. Panaoura and Panaoura (2014) found pre-service primary school teachers to be unable to transfer the learned theory of creativity in mathematics teaching to practice. Kattou et al. (2009) found that teachers acknowledge the importance of creativity in teaching but many of them don't practice it. In the light of this present study concentrates on the analysis of secondary school mathematics teachers' perception of creativity.

Objectives of the Study

Great interest has been taken recently to know the perception of teachers towards mathematical creativity (Desli & Zioga, 2015). A similar attempt was made in the framework of the present study. The study adds to the

existing literature through the conceptions of 20 secondary school mathematics teachers teaching in Varanasi district of U. P. towards creativity in mathematics.

The present study was carried out by keeping in view the following objectives:

- To study the conceptions of school mathematics teachers from CBSE and U.P. board secondary towards creativity in the mathematics classroom.
- To identify the features of creative mathematics teachers from the descriptions given by the CBSE and U.P. board secondary school mathematics teachers.
- To recognize the importance of creativity in the eyes of CBSE and U.P. board secondary school mathematics teachers.
- To re-evaluate tasks used by the CBSE and U.P. board secondary school mathematics teachers to make their class creative.
- To discern the opportunities provided by the school organization to the CBSE and U.P. board secondary school mathematics teachers to make their class creative.

Methods

Research Design

The qualitative research method was adopted in the study. The data for the present study were collected through a structured interview consisting of five items based on the objectives of the study with the teachers.

Sample

The sample of the study consisted of 20 secondary school mathematics teachers of 20 different schools (10 CBSE and 10 U. P. board schools) of Varanasi district of Uttar Pradesh. The sample was selected randomly from 10 blocks (8 blocks + Nagar Nigam block + Nagar Palika Ramnagar block) of Varanasi district. A list of all the CBSE and U. P. board schools were collected from the DEO office. After that, one CBSE school and one U. P. board school was selected from each block by using a lottery system. After the selection of school, teachers were given a form to fill their personal information including their name, qualification, gender, age, and their teaching experience. Teachers varied in their teaching experience from 1 to 26 years. Teachers having long teaching experience (above 10 years) were included in the sample of the study. Teachers who are teaching for decades are considered already a good teacher but to know whether they are creative or not, they were taken in the sample of the study. The distinction between a good teacher and a creative teacher is one of emphasis and intention (Cremin, 2015). Good teachers recognize the importance of inventiveness while creative teachers seek creativity in their teaching (Cremin, 2015).

Instrument of Data Collection

A structured interview schedule of five items was prepared by the investigator herself. The interview was carried out by the investigator and the responses were noted and audiotaped by using a voice recorder. The data were collected and analyzed. After analyzing the data conclusions were drawn about teachers' perceptions of mathematical creativity.

Validity and Reliability

The structured interview schedule was reviewed based on the comments of the expert. So, it has face and content validity. To determine the reliability of the tool inter-rater reliability was adopted.

Result

The result of the present study was based on the responses on all the five items by the 20 secondary school mathematics teachers of CBSE and U. P. board schools of Varanasi and presented in the tabular form here in after (Table 1 and 2).

Table 1: Interview summary of CBSE board secondary school teachers

Teachers (CBSE Board)	What do you mean by creativity in mathematics teaching?	What are the characteristics of mathematics teachers?	Why is creative teaching important in mathematics?	How will you make your class creative? Please tell a few tasks.	How does your organization helps you in making your class creative?
1. Mount Litera Zee School	Visual representation	Famous Liked by students	Important for survival in modern era	Geometrical figures like 3D figures by using paper cutting to teach volumes and surface areas	Maths lab, library, smart class in every classroom, green board and stylus
2. Bal Niketan School	Providing TLM	Knowledge of TLM Up to date	Increases understanding power Students follow teacher and learn from them and feel satisfied	Pythagoras Theorem by using stick Use of chart for teaching any theorem	Library facility Maths lab full of equipment Institute is ready to bring the TLM No smart class
3. Scholar's Academy School	To find new methods to solve any kind of problem in mathematics	Teaching related to real life	Students don't understand theory	Teaching related to real life Angles, board plane 2D and 3D figures	Smart class facility Computer facility Library full of books and easily available No maths lab
4 Gyandeep Academy, Chitaipur	Correlating with the surroundings of the students	Accuracy Stick to the point	Not necessary for higher classes like IX and X where only practice is needed	Arithmetic Progression using demonstration method	Permit the teacher to use any method of teaching Allow to take smart classes two days in a week. Library facility
5. Jai Public School	Teaching maths like game	Mastery on the subject Use different methods of teaching Concentrate on week students	To teach some important concept	Binary operation by using composition table	Monitored with new teaching methods Smart class one day in a week No maths lab Provides books to the teachers
6 Mahatma J. F. Public School	Teach through examples Start with fundamentals	Ability to take on the spot decisions Focus on week students Free mind Doesn't take any kind of burden	Without creativity student's will not be aware in the class	Used cubes for teaching $(a+b)^3 = a^3+b^3+3ab(a+b)$	Maths lab facility with full of equipment and takes on class in maths lab Library facility Smart class, but less in use, once in a month
7 Varanasi Public School	Use of modern techniques for teaching particular topics Correlating with student's real life	Make students feel that mathematics is not a difficult subject Eradicate fear from students Teach as a whole	Makes the subject interesting Makes easier to understand	While teaching linear equation in one variable, starts from equation, then variables and then correlate them	School gives 40 minutes and it depends on the teacher that how they utilize it Maths lab and library facility No smart class

8 St. Xavier's High School	Teaching correlated with daily life of students	Always try to do something new in teaching	Without creativity child will not take interest	Starts teaching with anything in hand and tell about the relation between the object in hand and maths	No such help
9 Glenhill School	Emphasis on calculation Posing competitive question Teaching fundamentals	Good calculation power Have clear concept	Increases confidence level	Started from basics while teaching Trigonometry. Made a triangle on the board without any angle and asked about its base perpendicular and hypotenuse	Facilities like maths lab, smart class and library
10 Shree Aditya Narayan Singh Public School	Solving a problem in different ways	Disciplined Active Knowledge of different skills	It's the demand of time	Correlated with daily life to teach circumference of a Circle	No such facility except maths lab with some equipment

Table 2: Interview Summary of UP board secondary school teachers

Teachers (UP Board)	What do you mean by creativity in mathematics teaching?	What are the characteristics of mathematics teachers?	Why creative teaching is important in mathematics?	How will you make your class creative? Please tell few tasks.	How your organization helps you in making your class creative?
1 Queen's Inter College	Teaching related to student's background and their daily life	Effects on students psychologically	Students like the class and influenced by the teacher	Set theory Ask the students to tell about their village and draw it and tell them that it is universal and this is a set. After that ask them about how many literates, how many married etc.	Get books from library White board with good quality chalk
2 Sri KamlakarChowbey Adarsh Inter College	Solving problems by using new techniques which is different from textbooks	Use new techniques to solve mathematical problems	Mathematics is the mother of all subjects. It helps in rational development of students as well as teachers.	Using the rule of BODMAS for teaching simplification.	No such facility No technology and library facility
3 Sri KamlakarChowbey Adarsh Inter College	Effective teaching in the scarcity of resources	Good language Knowledge of mother tongue Attractive personality Use of movements in teaching	Mathematical knowledge is incomplete without creativity	Use of paper cuttings to teach triangles and its properties Use live examples	Books are made available to the teachers Teachers are monitored with teaching aids Provision of light in the classrooms

4 Shree Shanteshwar Balika Vidya Mandir	Practical base teaching To remove mathematical fear and pressure	Fun loving guy Elicit quick answer	It will make class interesting	Don't use blackboard Take the examples of the book and reach to the concept	No technology, no maths lab and no readymade teaching aids Library facility and computer lab for the students
5 Bangali Tola Inter College	Development of new thinking ability among students	Use activity-based teaching so that teaching becomes dynamic	Students learn easily Makes class interesting	Explaining by coming down to the level of students Use of papers to show the mathematical figures	No facility provided by the institute
6 Govt. Girls Inter College, Maldahiya	Learning by doing Involving students in teaching	Active and have practical knowledge also	Students will pay attention and they will be alert while teaching	Use the dimensions of the room for teaching Areas and Volume Use live examples for teaching	No library facility No smart class No maths lab Computer lab for students
7 Udai Pratap Inter College	Use of teaching models	Sensitive towards students Attractive attitude towards students Polite way of expression	To learn new things	While teaching Coordinate Geometry, used a simple bottle kept on a table to find out the exact position of the bottle	No help from the organization. Teach with the help of live examples only
8 Rani Murarika Inter College	Teach through effective examples Use of demonstration method	Pay more attention to the week students	It increases interest among students	Used compass and scale for visual representation of irrational number on number line	No facility is provided by the school even books are unavailable in the library
9 Govt. Girls Inter College, Cholapur	Use of different teaching methods for different students Correlating with daily life of students	Subject interest Answer as often as students ask question	Students learn better when they see it Learning by doing is more important for high school students	Used coins for teaching probability	Schools supports to teach through activity method Library facility No smart class No maths lab but there is one room where some teaching aids are kept
10 Chaubeypur Inter College	Breaking down problems into small steps	Deep knowledge of subjects Teaching through examples so learning doesn't become a burden for the students Logical based teaching	Students will take interest Learning will be like a game play for the students Learning will not be a burden for the students	Used graphs for the derivation of formula while teaching Inverse circular function	No facilities provided by the institution

Findings

In *the first item* of the interview schedule, it was asked to the teachers about the conception of creativity in mathematics teaching and most of the CBSE teachers (30%) summarized it as teaching correlated with real life. (20%) said that creativity in mathematics teaching is new techniques for solving problems. (20 %) teachers said that it is the use of TLM in teaching, (20%) said it is that teaching through examples and (10%) agreed on teaching like a game. Similarly, responses from U.P. board teachers reveal mathematical creativity is nothing but teaching mathematics concerning the student's daily life (20%), (20%) said that it is practical based teaching, (10%) said that it is solving problems with new techniques, (10%) said that creativity is effective teaching in scarcity of resources, (10%) agreed on the use of models in teaching, for (10 %) teachers creativity is teaching is breaking the concepts in small steps, (10%) agreed on involving students in teaching and developing thinking ability among students got (10%) agreement.

The *second item* was to study the perspectives of CBSE and U.P. board secondary school mathematics teachers regarding the attributes of creative teachers and (30%) CBSE teachers agreed on mastery on the subject. (20%) said that s/he knows different skills of teaching. (10%) teachers said that s/he knows of teaching-learning materials. (20%) said that the teacher will concentrate on the week students and (10%) said that s/he will teach by correlating to the daily life of the students. However, the teacher will be famous have got (10%) vote.

On the other hand, U.P. board teachers said that the teachers will have deep subject knowledge and interest in the subject (20%). (20%) of the teachers said that teachers have an attractive personality. (10%) said that the teacher will use new techniques to solve problems. (10%) said that a creative teacher will adopt activity-based teaching, (10%) said that the teacher will pay more attention to weak students, (10%) said that teachers will be active. (10%) said that the teacher will affect students and (10%) said that s/he will be a fun-loving person.

The *third item* was to know the reason for the importance of creativity. About (50%) of CBSE board teachers said that it makes the subject interesting and easier to understand. It is important for survival in the modern era (20%), students will be aware (10%), increases confidence level (10%), were some of the reasons behind the importance of creativity in mathematics classrooms. (10%) teacher said that creativity is not important for higher classes like IX and X. In the same way, (50%) of U.P. board teachers agreed that creativity is important because it makes the class interesting. (20%) said that it helps in better learning, (10%) said that it helps in the rational development of the teachers as well as students, (10%) said that mathematical knowledge is incomplete without creativity and (10%) agreed on the fact that creativity in teaching makes the students alert and attentive in the class.

The *fourth item* of the interview was to know the tasks adopted by the mathematics teachers to make their class creative. The most repeated answer of the (40%) CBSE school teacher was the use of live objects, teaching correlated with the real life of the students. Other answers provided by the teachers to make their class creative were the use of models, teaching-learning aids, compass, charts, and graphs (30%), (10%) teachers used the demonstration method of teaching and (20%) teachers teach by coming down to the level of students. While U.P. board (60%) teachers teach through lecture method and live objects easily available in the class. They try to connect their teaching with the daily life activities of the students. (20%) use graphs and scales, (10%) teachers use examples of the textbook for teaching and (10%) teachers make their class creative by teaching the rules first before starting any concept. Teachers of the U. P. board school hardly get any mathematical equipment from the school. Neither their school provides any type of teaching-learning aids nor they prepare it.

On the other hand, the *fifth and last item* of the interview schedule was to know the help provided by the school organization to the teachers to make their

class creative and the investigator came to know that most of the CBSE board schools (70%) of Varanasi district have good library facility for both teachers and students. (10%) school provides books to the teachers only not to the students and the other (20%) have no library facility. About (50%) schools have a smart class and (50%) schools run without smart classes. It was also found that only (10%) schools have maths lab full of equipment and (30%) schools have maths lab with some equipment. (60%) schools have no maths lab.

Coming down to U.P. Board schools only (30%) schools have library facility and (70%) schools have no library facility. No school provides maths lab and smart class or any type of technology for teaching. Only one school has a computer lab for the students. Schools allow the teachers to teach through any method but a very few who are younger ones use live examples in their teaching and rest prefer the lecture method with the conventional teaching-learning materials prepared by the students in their project work.

In addition to this, it was observed by the investigator that the teachers were overloaded with excessive work like maintaining the class register, taking admission of the students, collecting their fees, preparing a time table and question papers. Mathematics teachers have to take many classes because of the scarcity of mathematics teachers in the schools of both the boards. In addition to that teachers said that one teacher teaches all the three subjects' physics, chemistry, and mathematics. Teachers had to complete the syllabus on time as they have to help students to succeed in the board exam. They were given 40 minutes and within these 40 minutes they have to teach in such a way the syllabus would be completed on time, students are prepared for the exam and succeed in the exam with increased achievement.

Conclusion

The present paper aims to gain insight on the perception of CBSE and U.P. board secondary school mathematics teachers of Varanasi district of Uttar Pradesh on mathematical creativity, the extent as well as the tasks which they use to make their class creative and support from the organization to make their class creative. It was found that teachers' mathematical creativity is confined only to the use of teaching-learning aids, models and daily life examples in mathematics teaching which signifies that they touch only one aspect of originality. The study also reports that teachers are unaware of other components of creativity. CBSE and U. P. board teachers reveal that creativity in the mathematics classroom is important because it makes the class interesting and makes the concepts easier, Most of the CBSE board teachers said that they use live objects, different techniques of solving the problem and teaching-learning aids like the chart, model and compass. But teachers of the U. P. board teach by using the common objects present in their class. Regarding the help and support provided by the organizations to make the class creative CBSE board teachers reveal they were provided with all kinds of logistic supports but they were not given autonomy. Besides this, it was also found by the investigator that the organization of the U.P. Board doesn't provide logistic support to the teachers. It is also seen that the school organizations of both boards are lazy towards the professional development of the teachers. There is no provision for monitoring the teachers with the new teaching techniques. Neither, there is the provision of seminars, workshops, and conferences for the teachers nor they take an interest in their professional development. Most importantly there was no maths or science club in any school. Hence, there is a severe need that the organization, especially the U. P. board to consider the matter seriously and help their teachers to become a creative teacher indirectly their students to become a creative student.

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Exploring the Models of Designing Blended & Online Learning Courses for Adoption in Regular Teacher Education Course

Abstract

Models of online and blended teaching-learning have a unique feature regarding their development. The changes here are brought by technological advances, and only with the accumulating experiences of teaching, the pedagogical understandings have emerged. Online and blended learning modes have several features that support the fast-changing needs of professions. The Teaching profession is a profession where the changes in content happen at a relatively slow pace. The slow pace of change is one of the reasons that online and blended education has not been adopted in teacher education. The teacher education institutions should step forward to take up the responsibility to integrate blended online mode in their practice. It is in this context the study identified the potentials of different online course design models for use in a regular teacher education course. The surveyed models are Classroom type online learning, Massive open online courses (MOOCs), ADDIE Model, Online Collaborative Learning (OCL), Community of Inquiry (COI), Competency-based learning (CbL), Communities of practice (CoP). Their merits, demerits and potentials for being used in a regular mode teacher education course had been explored. The study concluded that the best suiting model was the Community of Inquiry (COI). Templates for designing blended and online courses based on COI had been suggested.

Keywords: *Models of online learning, Community of Inquiry (COI), teacher education, Online module design*

Introduction

Online and blended learning modes are being adopted in professional courses world over. They have several features that support the fast-changing needs of professional education. The teaching profession is a profession where the changes in content (for pre-service education) happen at a relatively slow pace. In India, since independence, the first serious change in curriculum, content, and duration happened in 2015, and many among the stakeholders are reportedly not happy about it. The slow pace of change is one of the reasons that online and blended education has not been adopted in teacher education in India.

There are other challenges also for educators in adopting online mode. They need to understand the potentials of the new mode and adapt their teaching content and teaching strategies to realize them. For example, they need to change the linear, logical structure of contents as given in textbooks. They also need to identify a useful model or design for constructing e-learning and blended learning courses. There are several course designs available for creating online learning modules. The differences among them are related to their differences in epistemological perspectives, technologies in use, teaching methods, and objectives of learning.

These variations in models of online teaching-learning are also due to a unique feature regarding the development of online mode. The changes here were brought by the technological advances, and with the

accumulating experience of teaching in the mode, people developed pedagogical understanding regarding it. In other words, we first get a new technology or technological advancement, then think about their various implementations.

In the beginning, the designing of online teaching-learning had only two influences: there were designs replicated from classroom teaching, and there were designs adapted from print or multimedia distance education courses. With time, several new designs have emerged which are capable of exploiting the potentials of online learning, but the primary forms have also survived. This study attempted to explore the models of online learning.

Objectives and method of study

The objectives of the study were to

O_1 Explore the merits and demerits of the different models of designing online courses.

O_2 Identify their potential for using them in a regular teacher education programme.

O_3 Develop templates for designing online and blended mode teaching.

This work is based on information and observations about the models in secondary sources. For the first and second objectives (**O_1 & O_2**), the literature on the subject was explored, and the merit and demerits of the models were identified. The researcher created a checklist for determining the usability of the different models for a regular mode teacher education course. The templates for designing online and blended modules as per the third objective (**O_3**) were developed by the researcher.

Online Models

Online learning is a changed learning environment as compared to the formal atmosphere of classrooms. The focus here shifts from teaching methods or strategy to designing models in such a way that arises, holds and directs the students' interest in meaningful learning. The seven models in purview here are Classroom type online learning, Massive open online courses (MOOCs), ADDIE Model, Online Collaborative Learning (OCL), Community of Inquiry (COI), Competency-based learning (CbL), Communities of practice (CoP). They were explored with the purpose of using them in a regular mode teacher education course.

Classroom Type Online Learning

Automatically recorded classrooms and flipped classrooms are two main forms of this design. They primarily focus on serving the needs of revision, absentees, and for better use of classroom time. Assessments in this model are almost at the same patterns as of the face-to-face classrooms. An example of this model is MIT classroom lectures recorded and made available through MIT's Open Course Ware.

The merit of the classroom type design is that it gets assimilated well with the traditional teaching practices. But, due to this reason only, many of the commentators consider it inadequate to meet the challenges of the digital age. Especially, it is considered incapable of supporting higher-level learning. At the same time, a simple imitation of the classroom, in the form of recordings, is inferior to the actual classes at least for the less motivated learners. It may merely increase cost without contributing anything significant. An indication of the features of the model is given in Table 1. It suggests that it is not very cost-effective. It also needs a higher level of technological skills.

Table 1: Identification of the potentials of Classroom Type Online Learning

Cost-effective	Blend with Face-to-face Mode	Individualised Learning	Increased Peer Interaction	Increased Teacher Interaction	Skills/ Tools Required
High cost of recording equipment and editing work hours	Needs high-level technical skills to earmark video minutes	Difficult and Costly	Only when used in an LMS environment like Moodle	Only when used in an LMS environment like Moodle	Recording with high video audio quality, Using editing software, Managing Online LMS/ YouTube Channel

Massive Open Online Courses (MOOCs)

Massive Open Online Courses (MOOCs) can also be considered as an advanced format of classroom type online learning. Due to the variations in the epistemological perspectives, the MOOCs deserve a separate treatment as online course design. In its most popular form, Massive Open and Online Course (MOOC) is a behaviourist oriented information transmission model. The mode of teaching is mainly through online short lectures in the form of recorded videos. It is combined with automated online testing, and sometimes the peer assessment is also used (Bates and Bates, 2015). This initial form is known as 'xMOOCs'. There are other variations like cMOOCs (Connectivist MOOCs).

The key design feature of cMOOCs as identified by Downes (2014) is the autonomy of the learners which means that the learners choose what content or skills they want to learn and there may be no formal curriculum. The second feature is diversity. There are variations in tools used, variety of participants, their knowledge level, and variety of content. Another feature is interactivity which is in forms of cooperative learning. It provides ample scope for communication among participants, and this interaction is the base of emerging knowledge among the students. Transparency is maintained regarding access to information, content, activities and assessment. The structure of cMOOCs is not predetermined. They evolve through the process of interaction and discourse. Online platforms like Qura.com is one such example. Even more designs of MOOCs are still evolving. Hence, there is some confusion about the definition and goals of MOOCs. An indication of the features of the model is given in Table 2. It suggests that it is not very cost-effective. It also needs a higher level of technological skills.

Table 2: Identification of the potentials of MOOCs

Cost-effective	Blend with Face-to-face Mode	Individualised Learning	Increased Peer Interaction	Increased Teacher Interaction	Skills/ Tools Required
High cost of equipment and editing work hours	Less flexibility if the only recorded class are used	In some variations of MOOCs	When used in an LMS environment like Moodle	When used in an LMS environment like Moodle	Recording with high video-audio quality, Using editing software, Managing Online LMS/ YouTube Channel

The ADDIE Model

ADDIE stands for five steps modelling and implementing of learning design. ADDIE is **A**nalyse, **D**esign, **D**evelop, **I**mplement, and **E**valuate. In the analyse phase of ADDIE, the variables like learner characteristics, learners' prior knowledge, resources available, etc. are considered. In the design phase, the learning objectives for the course and creation and designing of material is decided, and decisions about content and their format of presentation (video, audio, text, audio-visuals) are taken. The development stage includes identification of activities to fulfil the course objectives, analysis of textbooks, content module development and content chunking, the creation of new content, development of learning objects, development of tools for student assessment and additional resources to support learning. The Implementation stage starts with the announcement of the course. The instructor should provide ample scope for communications among the learners and for the learner-instructor communication. The evaluation is the last stage of the cycle of the ADDIE model, but it is advised to keep getting feedback on each of the stages as far as possible.

There are certain limitations to the ADDIE model. It is good for large and complicated courses. Still, it may be expensive and redundant for a small or traditional class because it focuses more on the design and development of content. Another limitation is that the extensive application of the model results in a sharp division of labour. It may involve faculty members, instructional designers, editors, web designers. It becomes costly and expensive. Due to the substantial infrastructural, human resource requirements, this model may not respond to rapidly developing new content, new technologies or apps being launched daily, and to a continually changing student base. Thus, the ADDIE model provides a good foundation for designing teaching and learning. Still, it is a predetermined, linear and inflexible model that may fail to handle more volatile learning contexts. An indication of the features of the model is given in Table 1. It suggests that there are certain limitations relating to cost. It also needs a higher level of technological skills and a bigger group of members.

Table 3: Identification of the potentials of ADDIE

Cost-effective	Blend with Face-to-face Mode	Individualized Learning	Increased Peer Interaction	Increased Teacher Interaction	Skills/ Tools Required
Not cost effective for small part of a traditional courses	Flexible	Possible if planned. By accounting previous knowledge of learners and providing different learning paths	Possible if adopted in the design	Possible	Planning and management skills, Pedagogic knowledge, Managing online LMS

Competency-based Learning

Competency-based learning is a model that is based on identifying relevant specific competencies or skills and supports the learners to master them at their own pace. Learners work individually rather than in a group. They can do it just for learning sake or for some form of certification.

Competency-based learning is a four-step model. Starting with defining the competencies in forms of overt or covert behaviour, it develops up to evaluation. Learner support or mentoring is a crucial part of the model. Learning is designed in a progressive manner. They are also coherent as they all constitute a specific job-related ability. It supports the learners to learn at their own pace.

There are certain limitations to this model. It is more focused on job orientated teaching. So non-job specific learning is not

convenient in this model. It is not suitable for the subject areas where it is difficult to identify specific competencies. It is not suitable for a constructivist approach. It also ignores social learning. It is also less effective for developing the higher-level skills requiring creativity, high-level problem-solving and critical thinking. An indication of the features of the model is given in Table 4. It suggests that it is cost-effective but not if individual mentoring is included. It needs less number of technological skills.

Table 4: Identification of the potentials of Competency-based Learning

Cost-effective	Blend with Face-to-face Mode	Individualised Learning	Increased Peer Interaction	Increased Teacher Interaction	Skills/ Tools Required
Yes But Individual mentoring is costly	Flexible but fit for job orientated courses	Yes, Inherent in the design	Yes, Possible	Yes, Inherent in the design	Leadership, Guiding skills, IT skills

Online Collaborative Learning (OCL)

The constructivist approaches to learning and the growing uses of the Internet have led to the development of computer-mediated communication (CMC), or networked learning. In a developed form, it is now called the Online Collaborative Learning (OCL) theory. Harasim (2012, p. 90) describes the OCL as a model of learning which encourages to support the students to create knowledge together. They are invited to invent, to explore the ways to innovate. During the process of exploration, they seek the conceptual knowledge that is needed to solve problems. They are not supposed to recite the right answers. In this theory, teachers play a key role in linking the students to the knowledge community, or to state of the art in the discipline they are working. Learning in this context is defined as conceptual change rather than behavioural change.

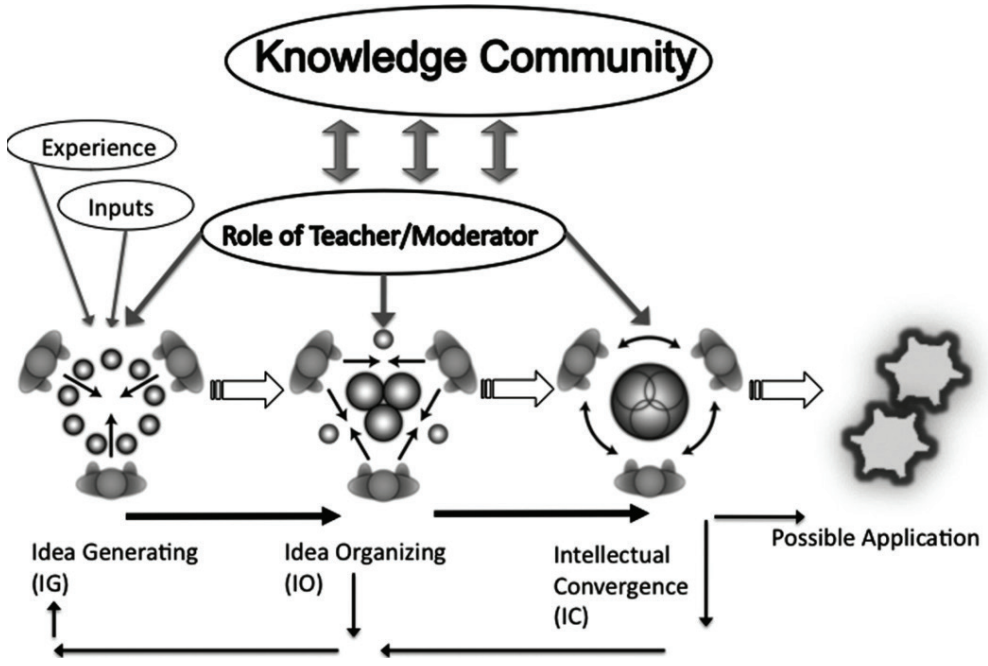


Figure 1: Three phases of online collaborative learning1

Harasim (2012) discussed three key phases of knowledge construction, as depicted in Figure.1:

- **Idea generating (IG):** Participants do brainstorming to collect the divergent thinking on given topics.
- **Idea organising (IO):** Participants discuss and argue about the ideas generated in the previous phase. They compare, analyse, and categorise the new ideas.
- **Intellectual convergence (IC):** In this phase, the participants reach a level of intellectual synthesis, understanding and consensus (including agreeing to disagree). It is usually achieved through the joint construction of some artifact or piece of work, such as an essay or assignment. The design is set in such a manner that the participants can go back to the previous phase at any point.

The key design principle of OCL is to make discussion a core activity and supplement it with textbook, videos and other things, not the other way round. The participation in the discussion activities should become an intrinsic desire among the learners, not just a compulsion to fulfil the grade requirements. An indication of the features of the model is given in Table 5. It suggests that it is cost-effective if free software are used. It also needs a higher level of technological skills.

Table 5: Identification of the potentials of Online Collaborative Learning

Cost-effective	Blend with Face-to-face Mode	Individualised Learning	Increased Peer Interaction	Increased Teacher Interaction	Skills/ Tools Required
Cost-effective if free tools like Google Drive are used for collaboration	Fit for higher-level leaning;	Yes, inherently	Yes, inherently	Yes	IT skills, Peer matching, Leadership, Guiding skills, Working knowledge of online software

Community of Practice

The community of practice (CoP) is a model in which experiential learning, social constructivism, and connectivism can be combined. Wenger (2013) defines Communities of practice as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly." According to Wenger, there are three characteristics of a community of practice. They are:

- Domain: a common interest that connects and holds together the whole community.
- Community: a group of people bound by the shared activities they pursue (for example, meetings, discussions) around their common domain.
- Practice: In a community of practice, members are called practitioners. Whatever they do in the context of the common interest informs their participation in the community, and whatever they learn from the community affects what they do.

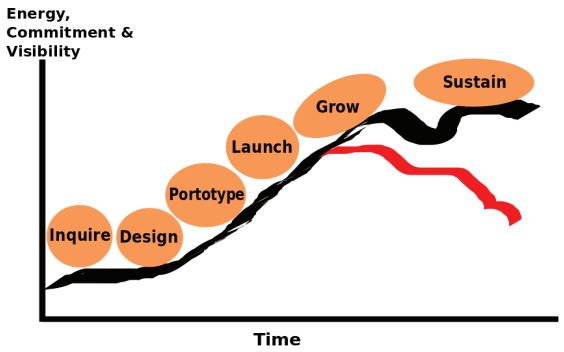
CoP is a self-organising system. It does not have a formal design. But in the course of time, the researchers have identified a number of actions that helps in creating CoP. Wenger et al. (2002) have identified seven key design principles to support a community of practice. They are as follows:

- Design for evolution: The community must have the flexibility to accommodate the interests of participants without going too far from the issues of common interests.
- Dialogue between inside and outside perspective: New perspectives from outside the community should be introduced

and discussed on a regular basis.

- Encourage and accept the different level of participation: Different levels of engagement should be allowed. For example, some of the participants are core members; some others who participate regularly but do not contribute much; still others who do not participate regularly but contribute significantly at times.
- Develop both public and private community spaces: The participants should be allowed to work in small private groups or if they want they can choose to be more public by initiating general discussion for example by writing on blogs or social media sites.
- Focus on value: The core values of the community should be emphasised through feedback and discussions.
- Combine familiarity and excitement: Besides the discussion on common concerns and perspectives, radical and challenging perspectives have to be introduced at times.
- Create a rhythm for the community: The community should follow a regular schedule of activities while considering the participants time and other constraints.

Researchers also talk about the life cycle of the CoP. They held that it emerges, it grows, and it has a life span. Figure No. 4 depicts these phases. Initially, in the inquiry phase, audience, purpose and vision for the community are identified. In the design phase, the activities, group processes, technologies, and roles to support the community's goals are defined. In the third phase of the prototype, the key stakeholders are identified, and they become committed to the purpose. With this success in hand, the fourth stage of launch opens the community for a wider audience. Proactive engagements are planned for the community members by creating and increasing the cycle of participation and contribution. This makes the fifth phase of development. The whole activities and inclusion of new blood have to the community have to be maintained for a longer time to sustain it till it gets institutionalized. That is the sixth phase.



The merit of CoP is that it connects people who are otherwise dispersed and disconnected. It provides them with a shared context and enables dialogue among them. It stimulates learning and diffuses existing knowledge to widespread people. It also introduces collaborative processes and helps people organise around purposeful goals. Overall it generates new knowledge for them.

By nature, CoP is outside formal educational organisations, as the participants are not looking forward to getting any kind of degree. Yet, it can be used as informal study groups in formal Settings. In their design, they can be compared to connectivist and constructivist MOOCs. One of the merit as well as demerit of this model is that there is no single right design for it. The specific needs of the community guide its structure and development. An indication of the features of the model is given in Table 6. It suggests that it is cost-effective. It also needs a number of skills.

Table 6: Identification of the potentials of Community of Practice

Cost-effective	Blend with Face-to-face Mode	Individualised Learning	Increased Peer Interaction	Increased Teacher Interaction	Skills/ Tools Required
Yes	Fit for non-academic self-motivated learning	Yes, Inherently	Yes, Inherently	Possible but generally not required	Soft Skills, IT skills, High Emotional Quotient required, Leadership,

Community of Inquiry (COI)

The Community of Inquiry (CoI) framework was developed by Garrison et al. (2000). It provides a framework that helps in addressing the challenges of online and blended learning environments. Its elements are depicted in Figure No. 2. They are named as social presence, cognitive presence, and teaching presence. As depicted in the figure, set in a communication medium, the educational experience is possible when all three 'presence' intersect. The teacher plays a role by selecting content and setting the climate for learning. A supporting discourse for creating a rationale for social interaction among the students and between teacher and students should be propagated by the teacher.

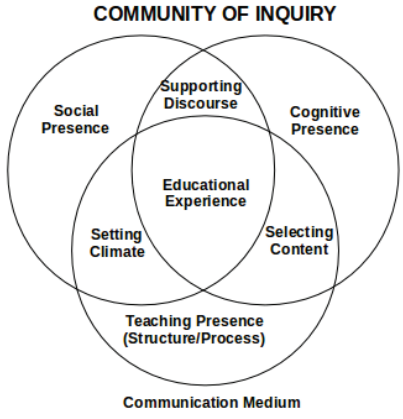


Figure 2: Community of Inquiry Framework

This framework is inspired by John Dewey's philosophy. His approach to teaching and learning is known as Collaborative-Constructivist Approach. The framework holds that an educational experience is embedded within a community of inquiry that is composed of teachers and students. The community is considered as essential for supporting collaborative learning and discourse, providing higher levels of learning. As Garrison and Vaughan (2008, p.9) elaborate, the CoI is based on the two ideas that are essential to a higher level of education: 'community' and 'inquiry'. The community recognises the social nature of education. It stresses the role of interaction, collaboration, and discourse in constructing knowledge.

The inquiry is the process of constructing meaning by the students through personal responsibility and choice. Thus, the cohesiveness and interactive community of learners are two ingredients of COI. The purpose of COI is to "critically analyse, construct, and confirm new knowledge." The framework of COI provides a means to integrate these elements and facilitate the designing for deep and meaningful educational experiences. (Garrison and Vaughan, 2008, p. 9)

6. Table No. 7: Elements of COI (Adopted from Garrison et al, 2000)

ELEMENTS	CATEGORIES	INDICATORS (examples only)
Social Presence	Open communication Group cohesion Affective expression	Risk-free expression Encourage collaboration Emotions
Cognitive Presence	Triggering event Exploration Integration Resolution	Sense of puzzlement Information exchange Connecting ideas Apply new ideas
Teaching Presence	Design & organisation Facilitating discourse Direct instruction	Setting curriculum & methods Sharing personal meaning Focusing discussion

Social Presence

The role of social presence in educational settings has been studied the most extensively, in both online and face-to-face course settings (Garrison and Arbaugh, 2007). Social presence is about the environment of social interaction among students and teachers. The categories of social presence are open communication, group cohesion and affective expression (See Table 5). Garrison and Vaughan (2008, p. 19–20) elaborates that for involving in the community of inquiry, the students must be provided with an open and risk-free environment. They should be respected as individuals, but at the same time, they should feel responsible and committed to the community of inquiry.

Besides social presence, cognitive presence is required for higher levels of learning, purposeful discourse to collaboratively construct, critically reflect, and confirm understanding.

Cognitive Presence

Cognitive presence, in essence, represents the inquiry process. In this process, the reflective and interactive processes are integrated. The cognitive presence has a cyclical inquiry pattern in which learning starts from experience, moving through reflection and conceptualisation to action and again move on to further experience. This is illustrated by the Practical Inquiry Model (see Figure 3). This model has two dimensions and four phases.

As depicted in Figure 3, the vertical axis defines the deliberation–action dimension. This dimension represents the repetitive nature of inquiry as representing both constructive and collaborative activities. The horizontal axis represents the perception–conception dimension. This process constructs meaning from experience. Although the dimensions are abstracted processes, the phases of inquiry resemble more closely the educational experience.

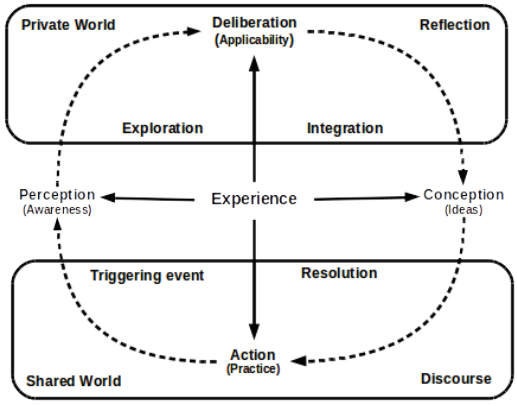


Figure 3: The practical inquiry model

The first phase is the triggering event, whereby an issue or problem is identified and defined. The second phase is the exploration of the problem and the gathering and refinement of relevant information. In the third phase, participants begin to reconcile and make sense of the information. Solutions

are hypothesised and debated. In the final phase, the preferred solution is applied and tested directly or vicariously. It may trigger another cycle of inquiry if the solution is not satisfactory. Cognitive presence is a recursive process that encompasses states of puzzlement, information exchange, connection of ideas, creation of concepts, and the testing of the viability of solutions, but not necessarily in a linear order. (Garrison and Vaughan, 2008).

Teaching Presence

Teaching presence is the presence of an experienced facilitator. It is essential for creating and sustaining a community of inquiry. It provides the design, facilitation, and direction for a worthwhile educational experience. Regarding online teaching effectiveness, Conrad (2005) reports in her research that students stated simply that "Good instructors created community, poor instructors didn't" (p. 12). Students perceive a strong connection between a successful learning experience and teaching presence. The unifying force of teaching presence is essential to create and sustain a community of inquiry in a blended environment when students are shifting between direct and mediated communication.

Strengths and weaknesses of CoI

Like OCL, CoI also uses a constructivist approach in computer-assisted learning. They use technology to increase and facilitate communication among learners and teachers. Their approach to learning is based on knowledge construction through social discourse.

They can help in creating deep and transformative learning as achieved by classroom discussions. They also assist in developing critical thinking, analytical thinking, synthesis, and evaluation. These high-level intellectual skills are considered significant for learners in a digital age.

These models require highly knowledgeable and skilled instructors. Its limitation, as discussed by Bates and Bates (2015), is about epistemological positions. He states that these models are "more likely to accommodate to the epistemological positions of faculty and instructors in humanities, social sciences, education and some areas of business studies and health and conversely it is likely to be less accommodating to the epistemological positions of faculty in science, computer science and engineering. However, if combined with a problem-based or inquiry-based approach, it might have acceptance even in some of these subject domains." An indication of the features of the model is given in Table 8. It suggests that it is cost-effective. It also needs less number of skills.

Table 8: Identification of the potentials of Communities of Inquiry (COI)

Cost-effective	Blend with Face-to-face Mode	Individualised Learning	Increased Peer Interaction	Increased Teacher Interaction	Skills/ Tools Required
Yes	Fit for blended learning	Yes, Possible	Yes, Possible	Yes, Inherently	IT skills, Peer matching, Leadership, Guiding skills,

Summary of findings

We examined the structure and merits of various models of online and blended learning. Some of them can be blended with a regular mode teacher education course. They are cost-effective and promote interaction among the learners. Community of Inquiry (COI) model is more suitable for a formal setup. Though Competency-based Learning can be

used for enhancing the skills of teaching-learning, COI is suitable for philosophical, psychological, and sociological aspects of the teaching curriculum. It is cost-effective. It also promotes peer and teacher interaction. It is not too demanding regarding the skills. Another merit of this model is that it can be used for both blended and fully online mode of teaching.

Implications of COI for teacher education in India

In a democratic nation, education as a social institution is responsible for inculcating a democratic ethos among citizens. But in Indian education, the democratic spirit is missing in the functioning of classrooms itself. We are yet to shed off the colonial legacy of producing obedient and 'civics-ised' citizens for the British Empire. With the legacy of John Dewey, the COI can provide a framework of practices to support responsible citizenship. In a study on a similar concept of the classroom community of inquiry, Brubaker (2012) found that such endeavours can provide a framework for negotiating authority and generate knowledge that "is important for informing efforts to foster democratic teacher education practices and prepare future teachers to teach reflectively." Another research related to Garrison's Community of Inquiry has found that social presence as an important factor for engagement with the new concepts, sense-making and peer support. Based on the patterns identified in the study, in his paper Armellini (2016, p.1202), suggests that in Community of Inquiry framework, social presence is more prominent than it was thought earlier, thus emphasising the discussion and collaborative decision-making process.

Another significant factor is the issue of evaluation raised for all levels of education in India. An obsession with educational outcomes and a focus on the examination have distorted learning environments and thereby, the learning experiences of the students. It is underlined in this model that the focus on assimilating measurable, although trivial, information should be minimised. Garrison and Cleveland-Innes (2005) state that higher educational outcomes are very difficult to define and measure. He says that outcomes change as students engage in the educational process and activities are modified. Garrison and Cleveland-Innes quote Burbules (2004) as, "Outcomes are constituted and reconstituted in active processes of inquiry, not taken as static endpoints" (p. 7). Unintended learning outcomes can be most educational. True inquiry is exploratory and often unpredictable. Burbules (2004) goes on to say that the "question of educational quality should be sought. . . in the reflexively critical and liberating activities of the classroom itself" (p. 9).

COI attempts to engage students fully in the educational process. It provides students with an interactive succession of learning experiences in the form of an inquiry cycle that leads to the resolution of an issue or a problem. Student's awareness of the inquiry process is crucial to complete the inquiry cycle and to prevent its premature closure. Thus, it ensures the learner-centric nature.

Another important issue relating to learning is metacognitive skills. Metacognitive awareness must be a goal of higher education for students to monitor and manage their learning. Metacognition is the regulation of cognition, which includes self-appraisal (assessing what needs to be done) and self-management (successfully carrying out the learning task). Engaging students in a higher-order learning experience requires that students have some metacognitive understanding of the inquiry process. In other words, students should learn how to learn. The teaching presence is expected to shape cognitive and metacognitive processes for the students. Thus, roles and responsibilities are well defined in this system.

In order to fulfil her role, the teacher is expected to be aware of the potentials and possibilities of the software support in the

teaching-learning process. She should also have a well-developed plan to exploit those potentials.

The Teacher Technologist

The phrase 'teacher technologist' is not to scare away the non-technical or less techno-savvy persons. It is not to say that every teacher using CoI should be a software engineer. On the contrary, it is to say that they should only know about the potentials of the content management system (CMS) like Wordpress or learning management system (LMS) like MOODLE. The following steps are suggested for the teachers for implementing blended or online mode:

- The teacher should read in-depth about the LMS or CMS used in the institution.
- It is also not necessary that the teacher should wait for the institutional initiative in this direction. The teacher can implement them at the individual level also. Both Wordpress and MOODLE provide installed setup on their servers. There is no need of knowing about any programming language or commands. They provide graphical user interface (GUI), where the teacher will need to fill information, upload images etc.
- In institutional conditions, there are various other options available, like editor teacher and non-editor teacher. A non-editing teacher can send her content to the administrator for creating the course and only supervise the student's activities.
- MOODLE also provide a free online instructor supervised course for new and budding MOODLERs each year.
- The teacher should explore the available designs for the courses. For example, MOODLE course can be designed in many ways like topical basis or weekly basis. It means that the teacher can design a class where student have to complete the learning task on weekly basis or she can design a class where they will complete the learning task topic-wise.
- The skill of writing a course in the MOODLE or Wordpress software is marginally above the skills required for writing an e-mail and preparing a word file. No programming code knowledge is needed.
- The CMS and LMS systems run on plug-ins. Plug-ins are added software to the main implementation to enhance their functionalities and user facilities. The teacher should explore the plug-ins to find out what can be useful for her and request the site administrator to activate them.
- There is a huge community of the users related to Wordpress and MOODLE. They provide support through forums. The teacher can get help there. She can also develop a local user group.

Thus, it is not too challenging to use a MOODLE or Wordpress site. But for implementing a CoI based program, the teacher should have a plan. Some suggestions regarding that are provided in the next section.

Template for course modules for blended and online mode teaching

For the third Objective (O_3), a set of course designs based on the Community of Inquiry Model is illustrated. The template identifies five aspects of the course design. The first aspect is the element of the COI that is in focus. As discussed above, the three elements of COI are complementary to each other, but they are not separate events. They overlap when the learning event is executed. The second element is the mode that is being used for the execution of the event. They can be face-to-face or online. There are two options for online interaction: synchronous and asynchronous. For synchronous interaction, the students and instructor have to be present for online discussion on the

stipulated time. It can be conducted through online instant messaging. The asynchronous strategies have no such compulsion. The next element is strategies for conducting the activity. They can be classroom-based or online. Next two elements are the nature of execution and expected result of the event. In Table No. 9, a template for blended mode teaching is depicted.

Table 9: Template of the blended teaching for a regular teacher education course

Day No.	Element	Mode	Strategy	Nature of Execution	Expected Result
Day 1	Social Presence Cognitive Presence	Face-to-face	Classroom Discussion	General discussion relating to the topic, Open and fearless expression, Without hesitation	Creation of general opinion. Identification of elements for discussion by the teacher
Day 2	Teacher Presence Cognitive Presence	Face-to-face	Classroom Discussion	Discussion of the broader context of the issue by the teacher (social, technical, philosophical)	Awareness of broader contexts of the content of the study
Day 3 to 5	Cognitive Presence	Online asynchronous	Programmed Learning	Browsing of course pages; Monitoring of online activity by the teacher (in LMS environment)	Mastering over Content
Day 3 to 5	Social Presence & Teacher Presence	Online asynchronous	Forum Discussion	Interaction in forum: asking questions, sharing observations	Analysing the content
Day 6	Social Presence Teacher Presence Cognitive Presence	Face-to-face	Classroom Discussion	General doubt clearing, Raising questions by teacher, Generalisation by teacher	Consolidation of knowledge
Day 7	Cognitive Presence	Self-work	Assignment relating to topic	Assignment by the students on a selected topic	Elaboration of new knowledge

The design for online teaching is not sharply different for online learning. The main differences are regarding the mode and strategies of the design. In online mode, we used the parallel strategies we use in face-to-face mode. For example, classroom discussion is substituted by forum discussion. The description of online design is depicted in Table No. 10.

Table 10: Template of online teaching for a regular teacher education course

Day No.	Element	Mode	Strategy	Nature of Execution	Expected Result
Day 1	Social Presence Cognitive Presence	Online asynchronous	Online Forum Discussion	General discussion relating to the topic, Open and fearless expression, Without hesitation	Creation of general opinion. Identification of elements for discussion by the teacher
Day 2	Teacher Presence Cognitive Presence	Online asynchronous	Online Forum Discussion	Discussion of broader context of the issue by the teacher (social, technical, philosophical)	Awareness of broader contexts of the content of study

Day No.	Element	Mode	Strategy	Nature of Execution	Expected Result
Day 3 to 5	Cognitive Presence	Online asynchronous	Programmed Learning	Browsing of course pages; Monitoring of online activity by teacher (in LMS environment)	Mastering over Content
Day 3 to 5	Social Presence & Teacher Presence	Online asynchronous	Online Forum Discussion	Interaction in forum: asking questions, sharing observations	Analysing the content
Day 6	Social Presence Teacher Presence Cognitive Presence	Online synchronous	Online Forum Discussion	General doubt clearing, Raising questions by teacher, Generalisation by teacher	Consolidation of knowledge
Day 7	Cognitive Presence		Assignment relating to the topic	Assignment by the students on a selected topic	Elaboration of new knowledge

Suggestions for implementation of CoI in Indian condition

Implementing CoI in teacher education institution is a challenging task. The following suggestions are useful for practicing CoI in Indian conditions.

- Motivating the learners: One important challenge is to motivate the learners to take up the responsibility of learning. They are habituated to information feeding through their previous learning experiences. The cooperation of all the faculty members is needed here. If some of them are following the old system of providing content, it may create a discontent about the new method.
- Changing the curriculum: The curriculum of most of the teacher education institution is oriented towards the teacher-centric lecture method. In this method, the learning content is divided into small lessons, and the teacher delivers it to the students in class. CoI works in a different order. Once, the teacher completes motivational activity relating to a broad topic, It is expected that the learner will engage themselves with the learning content with a zeal to explore and inquire. They will interact with peers and teachers to construct their knowledge. This kind of requirement cannot be filled with a short duration class period of 50-60 minutes. They ought to work for at least a week or a fortnight to complete a list of task in their preferred sequence and manner.
- Including process evaluation: Evaluation is another challenge in CoI. Just giving projects and assignment are not sufficient. The students will only work during the closing dates of submission. The strategy is to put markers on different activities to be done by the students during the phase. For example, if they are to visit the library, they can give or get a token signed by the librarian. If they have to conduct a group activity, a record should be maintained and undersigned by all of the participants. These clues can be assigned some scores, and each of them have to achieve a minimum score for successful completion of the task.

Conclusion

This study noted the structure, functions and limitations of different online and blended models. But these models are products of western academic cultures that have integrated ICT into their regular practices. In Indian conditions, the expansion of ICT is yet to influence mainstream education practices in a serious way. The work culture of educational institutions is yet to consider

digital technologies as a reliable partner in transacting new knowledge. The students too are only slowly turning to the ICT for addressing the gaps in their learning. The attempts by governments have resulted in only Classroom type and behaviourist MOOCs. They are far from reaping the full potential the technologies. For a better result, the faculty have to come forward and take the initiative to change the pattern of teaching-learning practices. CMS like Wordpress and LMS like MOODLE are very user-friendly. They are intuitive, and teaching faculty can use them without much effort.

1. Figure 1 Source: https://opentextbc.ca/teachinginadigitalage/wp-content/uploads/sites /29/2014/11/Harasim-Figure-6.3.jpg)

2. Figure 2 Source: Redesigned from https://library.educause.edu//□media/files/library/2005/1/nli0531-pdf.pdf

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भारत में समावेशी शिक्षा की अवधारणा एवं विकास क्रम: विभिन्न नीतियों, दस्तावेज़ों एवं अधिनियमों के आईने में

सार

पहली बार विशेष शिक्षा के लिए शिक्षक प्रशिक्षण संबंधी योजना 1960 में दृष्टि बाधित बच्चों के शिक्षण योजना हेतु शिक्षक तैयारी की बात की गई। योजना आयोग ने सन् 1971 ई. में एकीकृत शिक्षा का प्रस्ताव प्रस्तुत किया, जिसके पश्चात भारत सरकार ने दिसम्बर, 1974 में विशेष आवश्यकता (दिव्यांग) वाले बच्चों के लिए एकीकृत योजना प्रारंभ किया। मानव संसाधन विकास मंत्रालय एवं यूनिसेफ़ के सहयोग से 1987 में विशेष आवश्यकता वाले बच्चों के लिए एकीकृत शिक्षा परियोजना (पी.आई.ई.डी.) एकीकृत शिक्षा की प्रयोगात्मक रूपरेखा प्रदान करता हैं। अंतराष्ट्रीय स्तर पर समावेशी शिक्षा के लिए 'सलमांका सम्मेलन ' 1994, मील का पत्थर साबित हुआ जो जून 1994 में स्पेन के सलमांका शहर में आयोजित हुआ जिसमें 92 देशों के प्रतिनिधि व 25 अंतरराष्ट्रीय संस्थाओं ने भाग लिया। इस सम्मेलन का प्रमुख निर्णय था 'सभी के लिए शिक्षा, जिसमें बच्चे, युवा और विशेष आवश्यकता वाले लोगों को सामान्य शिक्षा व्यवस्था में शिक्षा प्रदान करना।' सन् 1997 में विशेष आवश्यकता वाले (दिव्यांग) बच्चों के लिए एकीकृत योजना को ज़िला प्राथमिक शिक्षा कार्यक्रम के अर्न्तगत मिला दिया गया। 90 के दशक के अन्तिम समय में (अर्थात 1997) ज़िला प्राथमिक शिक्षा कार्यक्रम (डी.पी.ई.पी.) के अर्न्तगत भारत में समावेशी शिक्षा के दृष्टिकोण को समाहित किया गया, ज़िला प्राथमिक शिक्षा कार्यक्रम ने पाठ्यचर्या से संबंधित मुख्य मुद्दों को संबोधित किया, जैसे- 'कुछ बच्चों की पाठ्यक्रम तक पहुंच को कौन से कारक सीमित करते हैं। पूर्ण पाठ्यक्रम का उपयोग करने हेतुहेतु क्या-क्या संशोधनों की आवश्यकता है, आदि'। भारत में समावेशी शिक्षा के लिए वर्ष 2009 महत्वपूर्ण रहा क्योंकि इसी वर्ष ' शिक्षा का अधिकार अधिनियम' पारित किया गया, जिसने 'सभी के लिए शिक्षा' को संवैधानिक अधिकार प्रदान किया। विशेष आवश्यकता वाले (दिव्यांग) बच्चों के लिए एकीकृत योजना 100 हजार बच्चों को प्रभावित कर पाई थी।

मुख्य शब्द: समावेशी शिक्षा, विशेष आवश्यकता वाले बच्चें, नीतियाँ, समावेशन।

प्रस्तावना

स्कूलों में अक्सर हम कुछ गिने-चुने बच्चों को ही बार-बार चुनते रहते हैं। इस छोटे समूह को तो ऐसे अवसरों से फ़ायदा होता है, उनका आत्मविश्वास बढ़ता है और वे स्कूल में लोकप्रिय हो जाते हैं। लेकिन दूसरे बच्चे बार-बार उपेक्षित महसूस करते हैं और स्कूल में पहचाने जाने और स्वीकृति की इच्छा उनके मन में लगातार बनी रहती है। तारीफ़ करने के लिए हम श्रेष्ठता और योग्यता को आधार बना सकते हैं लेकिन अवसर तो सभी बच्चों को मिलने चाहिए और सभी बच्चों की विशिष्ट क्षमताओं को भी पहचाना जाना चाहिए और उनकी तारीफ़ होनी चाहिए। इसमें विशेष ज़रूरतों वाले बच्चे भी शामिल हैं, जिन्हें दिए गए काम को पूरा करने में ज़्यादा समय या मदद की ज़रूरत होती है। ज़्यादा अच्छा होगा अगर शिक्षक ऐसी गतिविधियों की योजना बनाते समय कक्षा में बच्चों से चर्चा करें और यह सुनिश्चित कर लें कि प्रत्येक बच्चा अपना योगदान दे पाए। इसीलिए योजना बनाते समय, शिक्षकों को सभी की भागीदारी पर विशेष ध्यान देने की ज़रूरत है। यह उनके प्रभावी शिक्षक होने का सूचक बनेगा। स्कूल प्रशासकों और शिक्षकों को यह समझना चाहिए कि जब भिन्न सामाजिक-आर्थिक और सांस्कृतिक पृष्ठभूमि और भिन्न क्षमता स्तर वाले लड़के-लड़कियाँ एक साथ पढ़ते हैं तो कक्षा का वातावरण और भी समृद्ध तथा प्रेरक हो जाता है।

समावेशी शिक्षा केवल एक दृष्टिकोण ही नहीं बल्कि एक माध्यम भी है, विशेष कर उन लोगों के लिए जिनमें कुछ सीखने की ललक होती है और जो तमाम अवरोधों के बावजूद आगे बढ़ना चाहते हैं। यह इस बात को दर्शाता है कि सभी युवा चाहे वो सक्षम हों या अक्षम (दिव्यांग) उन्हें सीखने योग्य बनाया जाए। इसके लिए एक समान स्कूल पूर्व व्यवस्था, स्कूलों और सामुदायिक शिक्षा व्यवस्था तक सबकी पहुंच सुनिश्चित करना बेहद ज़ रूरी है। प्रशिक्षुओं की ज़रूरतों को पूरा करने के लिए यह प्रक्रिया सिर्फ लचीली शिक्षा प्रणाली में ही संभव है। ' समावेशी शिक्षा ऐसी शिक्षा प्रणाली है जिसमें मूल्यों, ज्ञान प्रणालियों और संस्कृतियों में प्रक्रियाओं और संरचनाओं के सभी स्तरों पर समावेशी नीतियों और प्रथाओं के सृजन के माध्यम से हर पढ़ने वाला बुनियादी अधिकारों यथा शारीरिक, संवेदनात्मक, बौद्धिक और स्थिति जन्य आवश्यकताओँ के साथ सभी नागरिक अधिकारों को प्राप्त कर पाता है' (एन.सी.ई.आर.टी. 2016)।

यूनिसेफ़ समावेशी शिक्षा के बारे में बताता है कि हम पारंपरिक स्कूलों के लिए नियमित रूप से स्कूल प्रणाली के भीतर सीखने के अवसर उन्हें उपलब्ध करते हैं, जो पारंपरिक रूप से ब हिष्कृत किये गए हैं जैसे कि- दिव्यांग बच्चे, अन्य (भाषायी अल्पसंख्यक, सामाजिक पिछड़े, आर्थिक रूप से कमजोर, शिक्षित पिछड़े आदि)। यदि इन्हें स्कूलों में

अलग किया जाता है तो ये दिव्यांग और अन्य (भाषायी अल्पसंख्यक, सामाजिक पिछड़ें, आर्थिक रूप से कमज़ोर, शिक्षित पिछड़े आदि) बच्चों को उचित शिक्षण अवसर नहीं प्राप्त होता हैं तो वे समाज से अलग थलग पड़ जाते हैं। इस प्रकार समावेशी शिक्षा से अभिप्राय है कि वह शिक्षा जिसमें दिव्यांग एवं अन्य सामान्य विद्यार्थियों को एक साथ एक ही कक्षा में भेदभाव रहित वातावरण में शिक्षा प्रदान की जाये। जिससे ये दिव्यांग विद्यार्थी समाज में आसानी से समायोजित हो जाएं।

एन.सी. एफ़ -2005 में बताया गया है कि समावेशन की नीति को हर स्कूल और सारी शिक्षा व्यवस्था में व्यापक रूप से लागू किए जाने की ज़रूरत है। बच्चे के जीवन के हर क्षेत्र में वह चाहे स्कूल में हो या बाहर, सभी बच्चों की भागीदारी सुनिश्चित किए जाने की ज़रूरत है। स्कूलों को ऐसे केंद्र बनाए जाने की आवश्यकता है जहाँ बच्चों को जीवन की तैयारी कराई जाए और यह सुनिश्चित किया जाए कि सभी बच्चों, ख़ास कर शारीरिक या मानसिक रूप से असमर्थ बच्चों, समाज के हाशिए पर जीने वाले बच्चों और कठिन परिस्थितियों में जीने वाले बच्चों को शिक्षा के इस महत्वपूर्ण क्षेत्र के सबसे ज्यादा फ़ाय दे मिलें।

समावेशी शिक्षा से संबंधित विभिन्न शिक्षा आयोग, नीतियाँ, अधिनियम एवं दस्तावेज़

भारतीय संविधान में समावेशी समाज की संकल्पना हेतुहेतु अनेक प्रावधानों का वर्णन प्राप्त होता हैं, जैसे कि वर्णित हैं अनुच्छेद (आर्टिकल)-14 में 'कानून के सामने सभी नागरिक समान हैं'। अनुच्छेद-15 में 'राज्य किसी भी नागरिक को धर्म, नस्ल, जाति, लिंग, जन्मस्थान या विशेष आवश्यकता में से किसी भी आधार पर भेदभाव नही करेगा। अनुच्छेद-41 में 'एच्छिक कार्य करने का अधिकार'। अनुच्छेद-45 में राज्य 6 वर्ष तक के आयु वाले बच्चों को प्रारंभिक बा ल्यावस्था देखभाल एवं शिक्षा प्रदान करने का प्रावधान करे'। संविधान के 86 वें संशोधन (2002) के द्वारा अनुच्छेद-21 (क) में 6 से 14 वर्ष के बच्चों के लिए निःशुल्क एवं अनिवार्य शिक्षा का प्रावधान किया गया है।

माध्यमिक शिक्षा आयोग-1952-53 की स्थापना 23 सितम्बर 1952 को हुई थी, यह आयोग विशेषतः माध्यमिक शिक्षा से संबंधी सुझाव प्रस्तुत करने हेतुहेतु गठित किया गया था। इसने अपने सुझाव जून 1953 में प्रस्तुत किये। इस आयोग ने विशेष आवश्यकता वाले बच्चों की शिक्षा के संदर्भ में केवल स्कूलों की स्थापना पर बल देने की बात की है। जैसा कि आयोग ने बताया कि विशेष आवश्यकता वाले (दिव्यांग) बच्चों की ज़रूरतों को पूरा करने के लिए बड़ी संख्या में विशेष शिक्षा स्कूलों की स्थापना की जानी चाहिए। और आयोग बताता है कि विभिन्न देशों में विशेष आवश्यकता वाले बच्चों (दिव्यांगों) के लिए विशेष प्रकार के स्कूलों की आवश्यकता को मान्यता दी गई है। कुछ उन्नत देशों में मानसिक और शारीरिक रूप से विशेष आवश्यकता वाले (दिव्यांग) बच्चों के लिए विशेष स्कूलों की एक नियमित प्रणाली स्थापित की गई है। प्रत्येक राज्य में ऐसे बच्चों के लिए कुछ स्कूल होने चाहिए जहाँ विशेष रूप से उनकी आवश्यकता के अनुकूल प्रक्रिया अपनायी जा सके। सामान्य बच्चों की सहज प्रगति के हित में भी यह आवश्यक है। दुर्भाग्य से भारत में बड़ी संख्या में दृष्टिहीन, श्रवण हीन और वाक हीन प्रकृति के बच्चे हैं। वर्तमान में ऐसे बच्चों के लिए केवल कुछ संस्थान हैं। हमने उनमें से कुछ को देखा है और हमें यह जानकर ख़ुशी हुई कि दृष्टिहीनों को उत्कृष्ट निर्देश प्रदान किए जा रहे थे और उन्हें बुनाई, कताई, टोकरी बनाने, रतन का काम, लकड़ी का काम, संगीत, आदि जैसे उपयोगी अवतारों के लिए प्रशिक्षित किया जा रहा था। यह भी ध्यान दें कि भारत सरकार ने दृष्टिहीनों के लिए सभी स्कूलों में उपयोग के लिए एक समान ब्रेल कोड विकसित करने के लिए विशेष कदम उठाए हैं। 'विशेष आवश्यकता वाले विद्यालयों को आवश्यक रूप से आवासीय होना चाहिए जहां बच्चों को कुछ वर्षों तक रखा जा सकता है जब तक वे कुछ उपयोगी व्यवसाय करने के लिए उपयुक्त नहीं हो जाते हैं। म गर विशेष आवश्यकता वाले (दिव्यांग) बच्चों के इस दुर्भाग्यपूर्ण वर्ग की आवश्यकता को पूरा करने के लिए ऐसे स्कूलों की संख्या में काफ़ी वृद्धि करने की आवश्यकता है। विशेष आवश्यकता वाले (दिव्यांग) बच्चों के स्कूलों के अलावा कुछ राज्यों में विशेष स्कूल भी हैं जहां तपेदिक या गंभीर शारीरिक विकृति जैसी गंभीर बीमारियों से पीड़ित बच्चों को खुली हवा में रखा और शिक्षित किया जाता है। कई पश्चिमी देशों में, ऐसे बच्चों को विशेष ओपन-एयर स्कूल में समायोजित किया जाता है, जहां चिकित्सा उपचार के साथ-साथ उनके लिए एक उपयुक्त प्रकार की शिक्षा प्रदान की जाती है। हम अनुशंसा करते हैं कि ऐसी बीमारियों से पीड़ित बच्चों के लिए कुछ केंद्रों में ऐसी संस्थाएं शुरू की जानी चाहिए। इन्ही बिन्दुओं के माध्यम से आयोग विशेष आवश्यकता वाले (दिव्यांग) बच्चों की शिक्षा के संदर्भ में अपनी बात करता है जिसमें आयोग केवल भौतिक सुविधा बढ़ाने की सिफ़ारिशें प्रस्तुत करता है। क्योंकि तात्कालिक परिस्थितियों में सबसे बड़ी कमी संरचनात्मक ही रही है, इसी की अभिपूर्ति हेतु आयोग ने अपनी सिफ़ारिशें प्रस्तुत की हैं।

कोठारी आयोग-1964-66 यह बताने वाला पहला शिक्षा आयोग था कि 'विशेष आवश्यकता वाले (दिव्यांग) बच्चों की शिक्षा का आयोजन केवल दया भाव के कारण नहीं बल्कि उनके अधिकार व उनकी समाज के लिए ज़रूरत के कारण किया जाना चाहिए। यद्यपि भारतीय संविधान ने विशेष आवश्यकता वाले (दिव्यांग) बच्चों सहित सभी के लिए अनिवार्य शिक्षा के संबंध में विशिष्ट निर्देश प्रदान किये थे किन्तु इस संबंध में बहुत कम काम किया गया है। आयोग ने इस बात पर स्पष्ट रूप से ज़ोर देते हुए बताया कि विशेष आवश्यकता वाले (दिव्यांग) बच्चों की शिक्षा 'सामान्य शिक्षा प्रणाली' का अविभाज्य अंग होना चाहिए। जिस समय इस आयोग ने अपनी सिफ़ारिशें प्रस्तुत कीं उस समय 250 से अधिक विशेष विद्यालय मौजूद थे। आयोग ने 1986 तक 15 प्रतिशत दृष्टिहीन, श्रवणह्रास एवं अस्थि विकलांगों (दिव्यांगों) तथा 5 प्रतिशत मानसिक मंद विकलांगों (दिव्यांगों) हेतु

शिक्षा उपलब्ध कराने का लक्ष्य निर्धारित किया। आयोग ने इस लक्ष्य की पूर्ति हेतु एकीकृत शिक्षा के महत्व पर विशेष बल दिया क्योंकि यह विशेष आवश्यकता वाले (दिव्यांग) बच्चों की सामान्य बच्चों के साथ आपसी समझ विकसित करने में प्रभावी और उपयोगी होता है। आयोग ने विशेष आवश्यकता वाले (दिव्यांग) बच्चों की शिक्षा एवं मुद्दों हेतु धन आवंटन पर विस्तार से प्रस्ताव दिया एवं बताया कि- शिक्षा मंत्रालय द्वारा विकलांगों (दिव्यांगों) के विकास हेतु आवश्यक धन आंवटन किया जाना चाहिए और एन.सी.ई.आर.टी को विशेष आवश्यकता वाले (दिव्यांग) बच्चों के अध्ययन हेतु एक प्रकोष्ठ (सेल) स्थापित करना चाहिए। प्रकोष्ठ का मुख्य कार्य देश और विदेश में हो रहे अनुसंधान के साथ सम्पर्क में रहना एवं शिक्षकों के लिए सामग्री निर्माण करना होगा। (कोठारी आयोग. पृष्ठ. 124)

राष्ट्रीय शिक्षा नीति-1986 में विशेष आवश्यकता वाले (दिव्यांग) बच्चों संबंधी सिफ़ा रिशों का वर्णन किया गया हैं। शारीरिक तथा मानसिक दृष्टि से विकलांगों (दिव्यांगों) की शिक्षा देने का उद्देश्य यह होना चाहिए कि वे समाज के साथ कंधे से कंधा मिलाकर चल सके, उनकी सामान्य तरीके से प्रगति हो और वे पूरे भरोसे और हिम्मत के साथ जिंदगी जियें। इस संबंध में निम्नलिखित प्रयास किये जायेगें- 1. विशेष आवश्यकता (दिव्यांगता) अगर हाथ पैर की या मामू ली सी है तो ऐसे बच्चों की पढ़ाई आम बच्चों के साथ हो। 2. गंभीर रूप से विशेष आवश्यकता वाले (दिव्यांग) बच्चों के लिए छात्रावास वाले ख़ास स्कूलों की ज़ रूरत का प्रबंध किया जाए। इस प्रकार के स्कूल, जहॉ तक संभव होगा, ज़िला मुख्यालयों में बनाए जाए। 3. विकलांगों (दिव्यांग) के लिये व्यावसायिक प्रशिक्षण की पर्याप्त व्यवस्था की जाए। 4. शिक्षकों, खासतौर से प्राथमिक कक्षाओं के शिक्षकों, के प्रशिक्षण कार्यक्रमों को भी नया रूप दिया जाए ताकि वे विशेष आवश्यकता वाले (दिव्यांग) बच्चों की कठिनाइयों को ठीक तरह से समझ कर उनकी सहायता कर सकें। 5. विकलांगों (दिव्यांगों) की शिक्षा के लिए स्वैच्छिक प्रयासों को हर संभव तरीके से प्रोत्साहन किया जाए।

मानसिक स्वास्थ्य अधिनियम वर्ष 1987 में लागू किया गया, इस अधिनियम का प्रमुख उद्देश्य था कि मानसिक रोगी व्यक्तियों की शीघ्र पहचान करके उनका सर्वोत्तम उपचार किया जाये।अधिनियम मुख्यतः मानसिक विशेष आवश्यकता वाले (दिव्यांग) व्यक्तियों के उपचारात्मक उपाय, सामाजिक एवं चिकित्सीय देखभाल तथा अधिकारों का वर्णन करता हैं, अधिनियम मानसिक रोगियों को चिकित्सा, सुरक्षा, देखभाल एवं पालन-पोषण के अधिकार के प्रावधानों का वर्णन करता हैं।

भारतीय पुनर्वास परिषद अधिनियम सन् 1992 में पारित किया गया एवं 22 जून 1993 से लागू हो गया। वर्ष 2000 में इस अधिनियम में आमू ल संशोधन किया गया। विशेष आवश्यकता (दिव्यांगता) के क्षेत्र में शिक्षा की गुणवत्ता एवं प्रशिक्षण में सुधार हेतु इस अधिनियम को लाया गया। इस अधिनियम में कुछ प्रमुख मुद्दों पर बात की गई, जैसे कि- विशेष आवश्यकता वाले (दिव्यांग) व्यक्तियों के पुनर्वास संबंधी प्रशिक्षण नीतियों एवं कार्यक्रमों को नियमित करना; विशेष आवश्यकता (दिव्यांग) वाले समूह के साथ काम करने वाले विभिन्न श्रेणी के व्यावसायिकों (शिक्षक, चिकित्सक एवं शोधार्थी) की शिक्षा व प्रशिक्षण हेतु एक न्यूनतम मानक प्रस्तावित करना। उन सभी संस्थाओं, विश्वविद्यालयों को मान्यता प्रदान करना जो विशेष आवश्यकता वाले (दिव्यांग) व्यक्तियों के पुनर्वास के विषय पर उपाधि, प्रमाण पत्र, डिप्लोमा पाठ्यक्रम चलाते हैं; मान्यता प्राप्त पुनर्वास योग्यता रखने वाले व्यक्तियों की सूची केन्द्रीय पुनर्वास पंजीकरण में रखना: पुनर्वास एव विशेष शिक्षा के क्षेत्र में अनुसंधान को प्रोत्साहित करना। भारतीय पुनर्वास परिषद की स्थापना 1992 में की गई। भारतीय पुनर्वास परिषद अधिनियम के द्वारा ही भारतीय पुनर्वास परिषद की स्थापना हुई। भारतीय पुनर्वास परिषद ही देश में विशेष शिक्षा पाठ्यक्रम एवं विशेष शिक्षा हेतु शिक्षकों के प्रशिक्षक कार्यक्रम की संचालन एवं निगरानी करता हैं।

विशेष आवश्यकता वाले व्यक्तियों (दिव्यांग) के लिए अधिनियम सन् 1995 में पारित किया गया, अधिनियम का पूरा नाम- विशेष आवश्यकता वाले व्यक्तियों (दिव्यांगों) के लिए (समान अवसर, अधिकारों की सुरक्षा एवं सहभागिता) अधिनियम, 1995 हैं। यह अधिनियम 7 फरवरी 1996 से लागू हो गया। इस अधिनियम में सात प्रकार की विशेष आवश्यकताओं (दिव्यांगता) का वर्णन किया गया हैं जैसे कि- 1. अंधत्व, 2. अल्प दृष्टि, 3. श्रवणबाधा, 4. मानसिक मंदता, 5. मानसिक रूग्णता, 6. गामक बाधा, 7. कोढ़ उपचारित। पुनर्वास सम्बन्धी सभी प्रकार की सुविधाएं प्राप्त करने हेतु विशेष आवश्यकता (दिव्यांगता) का 40 प्रतिशत होना निर्धारित किया गया। इस अधिनियम में कुल चौदह अध्याय हैं, जिनमें से कुछ अध्यायों में समावेशी, समावेशन एवं समावेशी शिक्षा संबंधी प्रावधानों का वर्णन किया गया हैं, यथा- अध्याय- 4 में सरकारी एवं स्थानीय प्राधिकारियों द्वारा निःशक्तता (दिव्यांगता) का शीघ्र निदान एवं रोकथाम के प्रावधानों के बारे में बताया गया हैं। अध्याय-5 निःशक् तों (दिव्यांगों) की शिक्षा के बारे में वर्णन करता हैं कि सरकारें एवं स्थानीय प्रशासन सुनिश्चित करेंगे कि- निःशक्त (दिव्यांग) बच्चों को 18 वर्ष की आयु तक उचित वातावरण में निःशुल्क शिक्षा प्राप्त हो सके। निःशक्त (दिव्यांग) विद्यार्थियों का सामान्य विद्यालयों में एकीकरण के संवर्धन के प्रयास करें। जिन बच्चों को विशेष शिक्षा की आवश्यकता है उनके लिए सरकारी एवं निजी क्षेत्रों में विद्यालयों की स्थापना का प्रयास किया जाए, निःशक्त (दिव्यांग) बच्चों के लिए विशेष विद्यालयों में व्यावसायिक प्रशिक्षण का प्रबंध किया जाये। ऐसे निःशक्त (दिव्यांग) बच्चें जिन्होनें 5 वी कक्षा तक शिक्षा पूरी कर ली है किन्तु पूर्णकालिक आधार पर अपना अध्ययन चालू नही रख सकते एवं 16 वर्ष या उसके ऊपर की आयु समूह के बच्चों के क्रियात्मक साक्षरता की व्यवस्था के लिए अंशकालिक कक्षाओं के संचालन का प्रबन्ध करना, निःशक्त (दिव्यांग) बच्चों के लिए खुले एवं दू रस्थ विद्यालय तथा खुले विश्वविद्यालय के माध्यम से आगे की शिक्षा प्रदान करना, निःशक्तों

(दिव्यांगों) की आवश्यकतानुसार पाठ्यक्रम की पुर्न संरचना करना आदि संबंधी प्रावधानों का वर्णन प्राप्त होता हैं। अध्याय-6 में निःशक्त (दिव्यांग) व्यक्तियों के रोज़गार संबंधी प्रावधानों का वर्णन किया गया हैं, जिसमें वर्णित है - विशेष आवश्यकता वाले व्यक्तियों के लिए सरकारी प्रतिष्ठानों में 3 प्रतिशत नौकरियाँ आरक्षित रखी जाएं तथा ये 3 प्रतिशत दृष्टिबाधित, श्रवणबाधित एव गामक बाधित निःशक्तों (दिव्यांगों) के लिए हो (प्रत्येक हेतु 1 प्रतिशत) और सभी सरकारी शिक्षण संस्थान एवं शैक्षिक संस्थाएं जो सरकारी सहायता प्राप्त कर रही हैं निःशक्त (दिव्यांग) बच्चों के लिए कम से कम 3 प्रतिशत स्थान आरक्षित करेंगे, संबंधी प्रावधान किये गये हैं। अध्याय-8 में निःशक्त (दिव्यांग) व्यक्तियों के लिए बाधारहित वातावरण के सम्बन्ध में प्रावधान हैं, जिसमें बताया गया हैं कि निःशक्त (दिव्यांग) अस्पताल, रेलवे स्टेशन, प्रशिक्षण केन्द्र, मनोरंजन स्थल, निर्वाचन केन्द्र, कार्य क्षेत्र और सभी सार्वजनिक स्थलों की समस्त सुविधाओं का प्रभावशाली ढंग से उपयोग कर सकें, इसके लिए सरकार इस बात की स्पष्ट घोषणा करती है कि विशेष आवश्यकता वाले सभी सार्वजनिक स्थलों का बाधारहित होना अनिवार्य है, इसके लिए विशेष आवश्यकता वाले सार्वजनिक स्थलों एवं इमारतों में रैंप, निःशक्तों के अनुकूल शौचालय सुविधा, लिफ़्ट तथा लिफ़्ट आदि में ब्रेल चिह्न व श्रव्य संकेत, अस्पतालों में रैंप व ऐसे ही अनुकूली साधन उपलब्ध हो, सुनिश्चित किया जाए। यह अधिनियम निःशक्त (दिव्यांग) बच्चों की भौतिक सुविधाओं की उपलब्धता पर विशेष बल देता है, जिसमें निःशक्त (दिव्यांग) बच्चों की संरचनात्मक बाधाओं को समाप्त कर मुख्य धारा के समाज के साथ समावेशित किया जा सके। साथ ही यह शैक्षिक समावेशन की भी बात करता है जो कि एकीकृत शिक्षा के माध्यम से पू रा कराने का वर्णन करता है। इसी अधिनियम में विकलांगों (दिव्यांगों) को सुवि धाऐं प्राप्त करने हेतु बैंचमार्क का निर्धारण किया जाता है। इस अधिनियम पर सलमांका विवरण का पूरा प्रभाव पड़ा है, कहा जा सकता हैं कि सलमांका विवरण के कारण ही यह अधिनियम अस्तित्व में लाया गया।

राष्ट्रीय न्यास अधिनियम-1999 में पारित किया गया, इस अधिनियम का पू रा नाम 'राष्ट्रीय न्यास अधिनियम, (स्वलिनता, प्रमास्तिष्क पक्षाघात, मानसिक मंदता और बहु विशेष आवश्यकता (दिव्यांगता) प्रभावित व्यक्तियों के कल्याण हेतु) 1999 है। यह अधिनियम चार विशेष आवश्यकता व्यक्तियों के लिए है यथा- 1. स्वलीनता, 2. प्रमास्तिष्क पक्षाघात, 3. मानसिक मंदता, 4. बहु विशेष आवश्यकता। इस अधिनियम के मुख्य उद्देश्य थें निःशक्त (दिव्यांग) व्यक्ति जिस समुदाय से है उसमें यथा संभव पास रह सके; इतना उन्हें समर्थ एवं सशक्त किया जाए कि वे स्वतंत्रता व पूर्णता के साथ जीवन जी सकें, निःशक्त (दिव्यांग) व्यक्तियों को सहारा देने योग्य सुविधाओं का प्रबलीकरण हो, निःशक्त (दिव्यांग) व्यक्तियों के अभिभावक या संरक्षक की मृत्यु हो जाने पर उनकी देखभाल व संरक्षण की व्यवस्था करना, इस प्रकार के निःशक्त (दिव्यांग) व्यक्तियों को समान अवसर, उनके अधिकारों की सुरक्षा एवं पूर्ण भागीदारी को साकार करने के लिए सुविधा ए प्रदान करना। यह अधिनियम विशेषतः चिकित्सीय देखभाल एवं सामाजिक समावेशन पर बल देता है साथ ही यह अधिनियम विशेष आवश्यकता के चार प्रकार (स्वलिनता, प्रमास्तिष्क पक्षाघात, मानसिक मंदता और बहुविशेष आवश्यकता (दिव्यांगता), की विशेष आवश्यक ओं (दिव्यांगताओं) वाले व्यक्तियों हेतु सामुदायिक सहभागिता एवं समुदाय में सुलभ रूप से जीवन यापन की विशेष बात करता हैं। इस अधिनियम का कहना है कि इस प्रकार की विशेष आवश्यकता (दिव्यांगता) से युक्त व्यक्तियों की देखभाल एवं समावेशन की आवश्यकता है। यह अधिनियम विशेष आवश्यकता (दिव्यांगता) के चैरिटी प्रतिमान पर विशेष केन्द्रित करता है।

सर्व शिक्षा अभियान का कार्यान्वयन 2000-2001 से किया जा रहा है, सर्व शिक्षा अभियान को प्रारंम्भिक शिक्षा के सार्वभौमिकरण के उद्देश्य से प्रारंभ किया गया। सर्व शिक्षा अभियान में विशेष आवश्यकता (दिव्यांग) के संदर्भ में कुछ प्रावधानों का वर्णन प्राप्त होता है जैसे कि- विशेष प्रस्ताव के अनुसार विशेष आवश्यकता वाले (दिव्यांग) बच्चों को शामिल करने के लिए प्रति वर्ष 1200 रूपये तक प्रति बच्चे धनराशि आवंटन, 1200 रूपये प्रति बच्चे के प्रतिमान के तहत विशेषतः ज़रूरतमंद बच्चों के लिए ज़ि ला योजना का प्रावधान, संसाधन संस्थान की संलग्नता को बढ़ावा दिया जाए। सर्व शिक्षा अभियान के अर्न्तगत विशेष आवश्यकता (दिव्यांगा) वाले बच्चों के लिए शिक्षा के विभिन्न घटकों का वर्णन मिलता हैं जैसे- 1. सरल खोज एवं पहचान, 2. कार्यात्मक और औपचारिक मूल्यांकन, 3. शैक्षिक स्थानन (प्लेसमेंट), 4. उपकरण एवं मदद सामग्री, 5. समर्थन सेवाएँ, 6. शिक्षक प्रशिक्षण, 7. संसाधन समर्थन, 8. व्यक्तिगत शैक्षिक योजना, 9. अभिभावक प्रशिक्षण एवं सामुदायिक जुटाव, 10. योजना एवं प्रबंधन, 11. विशेष विद्यालयों का सुदृढ़ीकरण, 12 वास्तु बाधाओं को दूर करना, 13. अनुसंधान, निगरानी एवं मूल्यांकन, 14. विशेष आवश्यकता (दिव्यांग) युक्त लड़कियाँ। आदि विशेष आवश्यकता (दिव्यांग) से जुड़े घटकों की चर्चा सर्व शिक्षा अभियान के सिद्धान्त में प्राप्त होती हैं।

दसवीं पंचवर्षीय योजना (2002-2007) का उद्देश्य; योजना के अर्न्तगत सार्वभौमिक प्रारंम्भिक शिक्षा मुहैया करना, इसका उद्देश्य ग़ैर पहुँच वाले क्षेत्रों और विशेष वैचारिक नीति और कानूनी ढ़ाचों का प्रबंध, विशेष आवश्यकता समूहों के लिए बुनियादी शिक्षा मुहैया कराना हैं। बालश्रम केद्रित अभ्यासों (प्रथाओं) को सुधारने एवं अभिग्रहण करने जैसे विशेष हस्तक्षेप और रणनीतियाँ, लड़कियों, अनुसूचित जाति, अनुसूचित जनजाति, कामकाजी बच्चों, विशेष आवश्यकता वाले (दिव्यांग) बच्चों, शहरी वंचित बच्चे, अल्पसंख्यक समूह के बच्चें, ग़रीबी रेखा से नीचे के बच्चों, प्रवासी बच्चे और कठिन पहुँच समूहों पर केन्द्रित हो।

केन्द्रिय शिक्षा सलाहकार परिषद द्वारा बालिका शिक्षा, सार्वजनिक विद्यालय प्रणाली और समावेशी शिक्षा पर समिति का 8 दिसम्बर

2004 को गठन किया गया, समिति ने अपनी रिपोर्ट जून 2005 में प्रस्तुत की। समिति ने तीन मुद्दों-1. बालिका शिक्षा, 2. सार्वजनिक विद्यालय प्रणाली एवं 3. विशेष आवश्यकता वाले बच्चों के समावेशी शिक्षा, पर चर्चा की। समिति विशेष आवश्यकता के मुद्दों पर चर्चा करते हुऐ कहती है कि इसका उद्देश्य स्कूल प्रणाली, छात्र समुदाय और अभिभावकों को बड़े पैमाने पर तैयार करना होना चाहिए, ताकि वे स्थिति को स्पष्ट रूप से स्वीकार कर सकें। यानि सब यह मान सकें कि जिन स्कूलों में उन बच्चों को रखना है जिन्हें विशेष देखभाल की ज़रूरत है, वहां के शिक्षकों को पेशेवर रूप से उस उद्देश्य के लिए प्रशिक्षित होना चाहिए। हालांकि इसमें समय और संसाधन लगेगा, लेकिन अग्रणी स्कूलों, निजी या सरकारी, की पहचान करना चाहिए, अभ्यास करना चाहिए और समावेशी शिक्षा का तरीका दिखना चाहिए।

विशेष आवश्यकता (दिव्यांगों) वाले व्यक्तियों हेतु राष्ट्रीय नीति 10 फरवरी 2006 को लागू किया गया, इस नीति का निर्माण विशेष आवश्यकता (दिव्यांग) वाले व्यक्तियों के लिए समान अवसर, अधिकारों के संरक्षण एवं समाज में पूर्ण भागीदारी के लिए वातावरण तैयार करने के उद्देश्य से हुआ। इस नीति में कुछ प्रमुख मुद्दों की चर्चा की गई है, जैसे कि- दिव्यांगता की रोकथाम के लिए कार्यक्रमों पर विशेष बल दिया गया हैं, नीति में बताया गया हैं कि पुर्नवास कार्यवाही तीन समूहों में होगी- 1. सामाजिक पुर्नवास, 2. शैक्षिक पुर्नवास, 3. आर्थिक पुर्नवास। विशेष आवश्यकता वाली (दिव्यांग) महिलाओं के संदर्भ में इस नीति में बताया गया कि विशेष आवश्यकता वाली (दिव्यांग) महिलाओं को अपने बच्चों की देखभाल करने में भारी मुश्किलों का सामना करना पड़ता हैं सरकार विशेष आवश्यकता वाली (दिव्यांग) महिलाओं को वित्तीय सहायता प्रदान करेगी ताकि ये अपने बच्चों की देखभाल करने के लिए सेविकाओं को किराए पर ले सकें, ऐसी सहायता दो बच्चों तक सीमित होगी और दो वर्षो से अधिक नही होगी। विशेष आवश्यकता वाले (दिव्यांग) बच्चों के परिप्रेक्ष्य में नीति में बताया गया कि- सरकार विशेष आवश्यकता वाले बच्चों की देखभाल, संरक्षण व सुरक्षा के अधिकारों को सुनिश्चित करे तथा ये लोग समान अवसर एवं पूर्ण सहभागिता के साथ अपना जीवन व्यतीत कर सकें साथ ही विशेष आवश्यकता वाले (दिव्यांग) बच्चों को विशेष पुर्नवास सेवाओं के साथ शिक्षा, स्वस्थ्य, व्यावसायिक प्रशिक्षण के प्रति प्रभावी पहुँच और विशेष आवश्यकता का समावेशन सुनिश्चित करें। विशेष आवश्यकता वाले (दिव्यांग) व्यक्तियों को सार्वजनिक स्थानों पर बाधा मुक्त वातावरण बनाना। निःशक्तता (दिव्यांगता) के क्षेत्र में कार्य करने वाले गैर सरकारी संगठनों को सरकार द्वारा प्रोत्साहन सहायता प्रदान करना, विशेष आवश्यकता वाले (दिव्यांग) व्यक्तियों के बारे में नियमित सूचना का संग्रहण करना, विशेष आवश्यकता वाले व्यक्तियों (दिव्यांगों) के लिए समावेशन हेतु एवं जीवन स्तर सुधार हेतु शोध कार्यों को सहायता प्रदान करना, का प्रावधान किया गया। नीति में महत्वपूर्ण बात बताई गई कि विशेष आवश्यकता वाले (दिव्यांग) व्यक्तियों से जुड़े हुए अधिनियमों जैसे- आर.सी.आई. एक्ट-1992, पी.डब्लू.डी. एक्ट-1995 और एन.टी. एक्ट-1999 में समय-समय पर संशोधन करना, विकलांगों (दिव्यांगों) का उपयुक्त कौशल विकास करके निजी क्षेत्रों में रोज़गार के लिए प्रोत्साहित किया जाना, अनेकों शिक्षा विकल्प, मुक्त शिक्षा और खुला विद्यालय, वैकल्पिक शिक्षा, दूरवर्ती शिक्षा, विशेष विद्यालय, गृह आधारित शिक्षा, परिभ्रमि अध्यापक प्रतिमान, उपचारी शिक्षा, अंशकालीन कक्षाएं, समुदाय आधारित पुर्नवास और व्यावसायिक शिक्षा द्वारा विकलांगों (दिव्यांगों) को शिक्षित एवं कार्य कुशल बनाया जाए। आदि समावेशन एवं समावेशी शिक्षा को बढ़ाने के लिए प्रावधान इस नीति में किये गये हैं।

शिक्षा का अधिकार अधिनियम-2009 का पूरा नाम- बच्चों के लिए निःशुल्क एवं अनिर्वाय शिक्षा का अधिकार अधिनियम, 2009 है। यह अधिनियम 4 अगस्त 2009 को पारित एवं 1 अप्रैल 2010 को लागू हुआ। इस अधिनियम में 6-14 वर्ष के बच्चों को निःशुल्क एवं अनिवार्य शिक्षा प्रदान किये जाने के प्रावधानों का वर्णन किया गया है, जैसे कि भारतीय संविधान के अनुच्छेद 21 (क) में वर्णित है। इस अधिनियम के लागू करने के पश्चात भारत विश्व के उन 135 राष्ट्रों में शामिल हो गया जहां शिक्षा मूल अधिकार के रूप में है। यद्यपि हम विशेष आवश्यकता (दिव्यांग) बच्चों के संदर्भ में बात करे तो इस अधिनियम में विशेष आवश्यकता वाले (दिव्यांग) बच्चों से संबंधित स्पष्टतया एक अलग वर्ग के रूप में सम्मिलित नही किया गया है किन्तु अध्याय प्रथम के खण्ड दो (घ) में 'अलाभकारी समूह के बच्चे (children belonging to disadvantaged group) के बारे में चर्चा की गई है। और बताया गया है कि उपयुक्त सरकार अधिसूचना के द्वारा स्पष्टीकरण करके किसी समूह को जो दूसरे कारण से अलाभान्वित है को इस लाभ में सम्मिलित कर सकती है। साथ ही अध्याय दो के भाग दो में वर्णित है कि विशेष आवश्यकता वाले (दिव्यांग) बच्चों को 6 से 14 वर्ष तक की शिक्षा तथा समान भागीदारी, संरक्षण एवं पूर्ण सहभागिता सुनिश्चित किया जाये, साथ ही पी.डब्लू.डी. एक्ट 1995 भी विशेष आवश्यकता वाले (दिव्यांग) बच्चों को प्रारंम्भिक शिक्षा के निःशुल्क एवं अनिर्वाय देने की बात करता है।

सन् 1995 के दिव्यांगजन अधिकार अधिनियम का संशोधित स्वरूप 28 दिसम्बर 2016 को पारित हुआ एवं 19 अप्रैल 2017 को लागू हो गया। यह अधिनियम संयुक्त राष्ट्र महासभा द्वारा 13 दिसम्बर 2006 को दिव्यांगजनों के अधिकारों के वर्णन के आधार पर निर्माण किया गया हैं, इस अधिनियम में 21 श्रेणी में विशेष आवश्यकता वाले बच्चों को विभाजित किया गया। इस अधिनियम में समावेशी दर्शन के विकास हेतु प्रमुख प्रावधानों का वर्णन किया गया जैसे कि- अध्याय प्रथम के भाग-2 (ड) में वर्णित है कि 'समावेशी शिक्षा' से ऐसी शिक्षा पद्धति अभिप्रेरित है जिसमें दिव्यांगता युक्त और दिव्यांगता रहित विद्यार्थी एक साथ शिक्षा ग्रहण करते हैं और शिक्षण एवं शिक्षा की पद्धति, विभिन्न प्रकार के दिव्यांग विद्यार्थियों की शिक्षा आवश्यकताओं की पूर्ति के लिए उचित

रूप से अनुकूलित की गई है। (पृष्ठ. 3) अध्याय दूसरे के खण्ड (3) में बताया गया है कि सरकार यह सुनिश्चित करेगी कि दिव्यांगजन अन्य व्यक्तियों के समान, समता, गरिमा के साथ जीवन व्यतीत कर सकें। समावेशी समाज में निर्माण की बात की गई है। खण्ड (4) में बताया गया है कि सरकार एवं स्थानीय प्रशासन सुनिश्चित कर उपाय करेंगे कि दिव्यांग स्त्री एवं बच्चे अन्य लोगों की भांति अपने अधिकारों का उपभोग कर सकें। खण्ड (5) दिव्यांग व्यक्तियों को समुदाय में, समुदाय के साथ में जीने का अधिकार होगा। खण्ड (7) सरकार दिव्यांगों को हिंसा, शोषण से संरक्षित करेगी। अध्याय तीसरे में दिव्यांगों की शिक्षा एवं शैक्षिक समावेशन के मुद्दों का वर्णन मिलता है, यथा- बिना भेदभाव के शैक्षिक संस्थानों में प्रवेश, अन्यों के समान खेल एवं मनोरंजन के अवसर प्रदान करना, भवन, परिसर और विभिन्न सुविधाओं तक पहुँच बनाना, दिव्यांग बच्चों के विकास के लिए समावेशी वातावरण का सृजन करना, समावेशी शिक्षा को संव र्धित करने और सुविधाओं को सुलभ बनाने के लिए विनिर्दिष्ट उपाय। स्कूली शिक्षा के सभी स्तरों पर समावेशी शिक्षा में सहायता हेतु वृत्तियों और कर्मचारिवृंद को प्रशिक्षित करना एवं सहायता हेतु संसाधन केन्द्रों की स्थापना करना आदि संबंधी प्रावधानों का वर्णन किया गया है।

परिचर्चा

उपर्युक्त हिस्से में जब हमने सभी शिक्षा नीतियों एवं दस्तावेज़ों का विश्लेषण किया, तब हमने समावेशी शिक्षा के विकास क्रम को दो भागों में विभाजित कर परिभाषित किया। इनमें से पहला भाग 21वी शताब्दी के पूर्व किए गए प्रयासों एवं प्रावधानों के वर्णन से संबंधित है। शोध परिचर्चा के दूसरे भाग में 21वी शताब्दी से किये गए प्रयासों एवं प्रावधानों का वर्णन किया गया है। प्रथम भाग में हम 20 वीं शताब्दी की चर्चा करेंगे, इसमें माध्यमिक शिक्षा आयोग-1952-53, कोठारी आयोग 1964-66, राष्ट्रीय शिक्षा नीति 1986, मानसिक स्वास्थ्य अधिनियम-1987, आर.सी.आई. एक्ट- 1992, पी.डब्लू.डी. एक्ट- 1995, राष्ट्रीय न्यास अधिनियम-1999 के विश्लेषण के पश्चात् कहा जा सकता है कि बीसवीं शताब्दी में विशेष शिक्षा को अलग से उपलब्ध करवाने पर बल दिया गया। किन्तु शताब्दी के मध्य में धीरे-धीरे विशेष आवश्यकता वाले बच्चों को भी मुख्य धारा समाज के बच्चों के साथ शिक्षा देने की बात प्रारम्भ कर दी गई थी। शताब्दी के मध्य भाग के बाद चलन क्रिया, दृष्टि बाधित एवं श्रवण बाधित विशेष आवश्यकता वाले बच्चों को सामान्य विद्यालयों से एकीकृत करने का प्रयास प्रारम्भ हो गया। इसी के परिणाम स्वरूप ही एकीकृत शिक्षा का प्रादुर्भाव हुआ। शताब्दी के अंत तक एकीकृत शिक्षा के स्थान पर समावेशी शिक्षा की चर्चा प्रारम्भ हो गई। क्योंकि एकीकृत शिक्षा के परिणाम सुखद नहीं प्राप्त हुए। एकीकृत शिक्षा व्यवस्था ने केवल विशेष आवश्यकता वाले बच्चों को विद्यालय से जोड़ने का काम तो कर दिया किन्तु समस्या जस की तस बनी रही। समस्या थी विशेष आवश्यकता वाले बच्चों को समाज द्वारा स्वीकृत किया जाना या इन्हें इस काबिल बनाना की ये बच्चे समाज का एक अभिन्न अंग बन सकें, किन्तु अपेक्षित परिणाम नहीं प्राप्त हुए जैसे कि इन्हें न समाज द्वारा पूर्ण स्वीकृति प्राप्त हुई न ही ये समाज के भागीदार बन सके केवल समाज ने हमेशा विशेष आवश्यकता वाले बच्चों को बोझ के रूप में लिया। किन्तु विशेष आवश्यकता प्रयासों का परिणाम यह हुआ की समाज की अभिवृत्ति में परिवर्तन आना शुरू हो गया इसी के परिणाम स्वरूप शुरूआती दौर में अलग-अलग शिक्षा की बात की गई थी।

- ✓ दूसरे भाग में 21वीं शताब्दी के प्रारम्भ में विशेष आवश्यकता वाले बच्चों की शिक्षा के किये गए प्रयासों एवं विकास की चर्चा की गई है, कि सर्व शिक्षा अभियान, बालिका शिक्षा, सार्वजनिक विद्यालय प्रणाली एवं समावेशी शिक्षा पर समिति-2004, विशेष आवश्यकता वाले बच्चों की शिक्षा के लिए राष्ट्रीय नीति -2006, शिक्षा का अधिकार अधिनियम-2009 और आर.पी.डब्लू.डी. एक्ट-2016 के विश्लेषण के पश्चात् कहा जा सकता है कि 21 वीं शताब्दी में अति गंभीर विकलांगता से युक्त बच्चों के लिए ही केवल विशेष शिक्षा के प्रावधानों पर बल दिया गया। साथ ही अन्य कम गंभीर विकलांगता से युक्त बच्चों के लिए समावेशी शिक्षा के प्रावधान पर पूर्ण बल दिया गया। भारत में अधिकांशतः सामान्य विद्यालयों को ही समावेशी विद्यालयों में परिवर्तित किया गया। भारत द्वारा संचालित कार्यक्रम सर्व शिक्षा अभियान समावेशी शिक्षा का पूरे विश्व में सबसे बेहतरीन उदाहरण साबित होता है यद्यपि हम समावेशी शिक्षा के मूल सिद्धांतों पर दृष्टिपात करते है। क्योंकि समावेशी शिक्षा ने विशेषतः विशेष आवश्यकता वाले बच्चों की स्कूलों तक पहुँच को सुलभ करने में निर्याणक भूमिका निर्वहन किया। यही कार्य सर्व शिक्षा अभियान ने भी किया कि अधिकांशतः विशेष आवश्यकता वाले बच्चों की विद्यालय तक पहुँच को सुलभ बनाया।

अन्त में

अन्त में कहा जा सकता है कि भारत में विकलांगों से संबंधित कानूनी प्रावधान बदले हैं। हम 19441 में सार्जेंट रिपोर्ट के सुझाव, कि कोई विशेष आवश्यकता वाला बच्चा यदि किसी विशेष विद्यालय के अनुकूल है तभी उस बच्चे को संबंधित विशेष विद्यालय में भेजा जाना चाहिए, से बहुत आगे आ गए हैं। तब से आज तक की नीतियों, अधिनियमों एवं दस्तावेज़ों को देखने पर उनमें समावेशी शिक्षा के विकास क्रम का ज्ञान प्राप्त होता है। कोठारी आयोग (1966-68) ने विशेष आवश्यकता वाले लोगों की शिक्षा को शिक्षा नीति का एक अभिन्न अंग माना। परन्तु उसमें व्यक्त समझ और दृष्टि भी बाद की समझ से अलग है। जैसे

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की प्रारम्भ में समावेशी शिक्षा, समेकित शिक्षा के रूप में थी जिसमें सिर्फ ख़ास तरह की विशेषताओँ को देखा गया था और प्रयास मात्र यह किया था कि जो विशेष आवश्यकता वाले बच्चे शिक्षा से दूर थे किसी तरह उन्हें विद्यालय तक पहुंचा दिया जाए, लक्ष्य उनकी पहुंच सुलभ करने का ही था। पर बाद में सभी विशेष आवश्यकता वाले बच्चों को सामान्य विद्यालय से जोड़ने की बात की गई जिससे ये बच्चे समाज का अभिन्न अंग बन सकें। किन्तु 21वीं शताब्दी के प्रारम्भ होने के बाद समाकेतिक शिक्षा समावेशी शिक्षा में परिवर्तित हो गयी जिसमे केवल विशेष आवश्यकता वाले बच्चों को विद्यालय तक पहुँच को सुलभ बनाना ही नहीं अपितु एक ऐसे वातावरण में शिक्षा प्रदान करना कि विशेष आवश्यकता वाले बच्चों का सर्वंगीण विकास हो सके। इस बारीक किन्तु महत्वपूर्ण अन्तर को पहचानना ज़ रूरी है।

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नई शिक्षा नीति 2019 का प्रस्तावित ड्राफ्ट: स्कूल कॉम्प्लेक्स

एक स्कूल से आशय एक ऐसे शैक्षणिक संस्थान से है, जिसकी स्थापना शिक्षकों के निर्देशन में विद्यार्थियों के शिक्षण हेतु सीखने का स्थान एवं वातावरण उपलब्ध कराने के लिए की गयी है।[1] अंग्रेजी शब्द 'कॉम्प्लेक्स' का निकटतम अर्थ हिन्दी में 'सम्मिश्र' ठहरता है। यह एक विशेषण है, जिसको किसी तथ्य, अवधारणा या विषय के जटिल मिश्रण के लिए व्यवहृत किया जाता है। यही अर्थ हमारे इस आलेख के संदर्भ हेतु आगे उपयोग में लिया गया है। 'स्कूल कॉम्प्लेक्स' का अर्थ है कि एक ऐसा सृजित ढांचा जिसमें एक क्षेत्र विशेष के स्कूल एक प्रशासकीय एवं अकादमिक नियंत्रण में हों।[2] इसके लिए सबसे मजबूत दो तर्क दिए जाते हैं, पहला-इससे स्कूलों/विद्यालयों का एकाकीपन (आइसोलेशन) दूर होगा और दूसरा-इससे शिक्षा की गुणवत्ता में वृद्धि होगी।

स्कूल कॉम्प्लेक्स के विचार के ऐतिहासिक संदर्भ की जांच-पड़ताल करने पर ज्ञात होता है कि अंग्रेज पादरी जॉन कॉटन ने वर्ष 1635 में स्कूल कॉम्प्लेक्स के विचार को लागू करने की कोशिश की। उन्होंने बोस्टन, इंग्लैण्ड में फ्री ग्रामर स्कूल को स्कूल कॉम्प्लेक्स के रुप में विकसित करनें का प्रयास किया, इस विद्यालय में लैटिन एवं यूनानी भाषा पढ़ायी जाती थी। यह स्कूल सार्वजनिक फंड से चलता था और इसकी शुरुआती कक्षाऐं स्कूल के अध्यापक फिलमॉन पोरमार्ट (Philemon Pormort) के आवासीय परिसर में आरम्भ हुई। स्कूल कॉम्प्लेक्स की व्यवस्था अपनाने के कुछ लाभ गिनाए जाते हैं, जैसे-इससे माध्यमिक एवं प्रारम्भिक विद्यालयों की लिंकिंग होगी तथा विद्यालयी शिक्षा व्यवस्था में व्याप्त एकाकीपन (isolation) की स्थितियां दूर होंगी, नई पाठ्य पुस्तकों, शिक्षक संदर्शिकाओं एवं शिक्षण सहायक सामग्रियों को ट्राई आउट करने एवं मूल्यांकन के मौके स्कूल कॉम्प्लेक्स को मिल सकेंगे, प्रयोगशाला, उपकरण, पुस्तकालय एवं शिक्षकों की कमी से जूझ रहे प्रारम्भिक विद्यालयों को सुविधाएं मिल सकेंगी, मूल्यांकन की बेहतर पद्धतियां विकसित कर सकेंगे और लागू कर सकेंगे, अकादमिक स्वायत्तता का बेहतर इस्तेमाल कर सकेंगे। वहीं इसको लागू करने में सामने आने वाली कतिपय चुनौतियों को भी अनदेखा नहीं किया जा सकता है, मसलन-स्कूल कॉम्प्लेक्स के लिए आधारभूत भौतिक एवं मानवीय संसाधन उपलब्ध कराना, स्कूल कॉम्प्लेक्स के मुखिया का अभिमुखीकरण इस प्रकार से करना कि वे स्कूल कॉम्प्लेक्स के मुखिया के रुप में कॉम्प्लेक्स के सभी विद्यालयों को बेहतर अकादमिक नेतृत्व दे सकें।

भारतीय संदर्भ में पहली बार राष्ट्रीय शिक्षा आयोग (1964-66), जिसे हम कोठारी आयोग के प्रचलित नाम से अधिक जानते हैं, के द्वारा स्कूल कॉम्प्लेक्स के विचार को लागू करने का सुझाव दिया गया और इस तरह से इसे शैक्षिक विमर्श के केन्द्र में ला दिया। इसके बाद वर्श 1986 की नई शिक्षा नीति और कार्य योजना 1992 के दस्तावेज में इस विचार को नकारा नहीं गया परन्तु इसके व्यवहारिक धरातल पर क्रियान्वयन के लिए कुछ किया नहीं गया, यह तथ्य भी वास्तविकत है। अब जबकि प्रस्तावित नई शिक्षा नीति 2019 ने अपने प्रस्तावित ड्राफ्ट में स्कूल कॉम्प्लेक्स के विचार को लागू करने का प्रस्ताव किया है और यह प्रतिबद्धता भी व्यक्त की है कि इसे कोठारी आयोग द्वारा प्रस्तुत विचार एवं भावनाओं के अनुरुप लागू किया जाएगा। अतः यह जानना बहुत जरुरी हो जाता है कि इस बारे में कोठारी आयोग की अनुशंसा में क्या-कुछ कहा गया है। वर्ष 1966 में लगभग 692 पृष्ठों में प्रकाशित कोठारी आयोग के प्रतिवेदन में पृष्ठ संख्या 263-264 में स्कूल कॉम्प्लेक्स के विचार को लागू करने के उद्देश्य, इसकी प्रक्रिया के बारे में कहा गया है। इस प्रतिवेदन में स्कूल कॉम्प्लेक्स के विचार को लागू करने के दो प्रमुख उद्देश्य बतलाए गये -

पहला: विद्यालयों के एकाकीपन (isolation) को दूर करना तथा उनको छोटे एवं रुबरु (Face to Face), सहयोगी समूह में काम करने में मदद करना।

दूसरा: विभाग से विद्यालय कॉम्प्लेक्स को यथासंभव सत्ता/अधिकारिता (authority) का प्रतिनिधायन (delegation) संभव बनाना। इसके लिए कहा गया ''जिला शिक्षा अधिकारी मुख्यतः स्कूल कॉम्प्लेक्स के संपर्क में रहेंगे। स्कूल कॉम्प्लेक्स्स, वे सभी डेलीगेटेड टास्क करेंगे जो अन्यथा विभाग के निरीक्षणकर्ता अधिकारियों द्वारा किए जाते रहे हैं। इससे विद्यालय अधिकाधिक स्वतंत्रता का इस्तेमाल करने में सक्षम हो सकेंगे, जिससे शिक्षा व्यवस्था अधिक लचीली एवं गतिशील हो सकेगी।''[3]

स्कूल कॉम्प्लेक्स किस तरह से काम करेंगे? इसके बारे में कोठारी आयोग ने महत्वपूर्ण सुझाव दिए हैं।[4] इनमें से कुछ प्रमुख निम्नवत रेखांकित किए जा सकते हैं, जो वर्तमान संदर्भों में भी उपयोगी हैं।

- स्कूल कॉम्प्लेक्स मूल्यांकन की बेहतर पद्धतियों को लागू कर सकेंगे तथा विद्यालय में बच्चों की अगली कक्षाओं में कक्षोन्नति की प्रक्रिया को विनियमित कर सकेंगे।
- कुछ सुविधाएं एवं उपकरण जो प्रत्येक विद्यालय को उपलब्ध कराना संभव नहीं है, इनको संयुक्त रुप से स्कूल कॉम्प्लेक्स के केन्द्रीय विद्यालय में उपलब्ध कराया जाएगा। केन्द्रीय माध्यमिक विद्यालय, पुस्तकालय को मेन्टेन करेगें तथा पड़ोस के विद्यालयों में इसको सरकुलेट करेगें। स्पेशल टीचर की सुविधाओं को भी पड़ोस के विद्यालयों से शेयर किया जाएगा।
- प्राथमिक विद्यालयों में कला एवं व्यायाम शिक्षक नियुक्त नहीं होते हैं। माध्यमिक विद्यालयों में इनकी नियुक्ति होती है। अतः इन अध्यापकों की सेवाऐं पड़ोस के सभी विद्यालयों को मिल सकें, इसके लिए सावधानी से इस प्रकार से नियोजन करने की ज़रुरत होगी कि वे अपने मूल विद्यालय के बच्चों को प्रयाप्त समय दे सकें।
- स्कूल कॉम्प्लेक्स की केन्द्रीयकृत प्रयोगशालाओं में निकटवर्ती पड़ोस के विद्यालय अवकाश अवधि में विज्ञान विषय सीख सकते हैं। इसके लिए संबंधित अध्यापक को प्रोत्साहन स्वरुप कुछ धनराशि का भुगतान किया जा सकता है। व्यय की यह राशि बहुत बड़ी नहीं होगी और इसके अच्छे परिणाम सामने आयेंगे।
- स्कूल कॉम्प्लेक्स की एक अहम जिम्मेदारी काम्प्लेक्स के सभी शिक्षकों की सेवारत शिक्षक प्रशिक्षण संबंधी जरुरतों को संबोधित करना होगा। कॉम्प्लेक्स के पुस्तकालय की पुस्तकों का अध्यापकों के बीच सरकुलेशन करवाना, निश्चित अन्तराल (माह में कम से कम एक बार) शिक्षकों की बैठक आयोजित करना, प्रदर्शन पाठ (Demonstration Lesson) का प्रस्तुतिकरण, शिक्षकों की क्षमता संवर्द्धन के लिए अवकाश अवधि में छोटे-छोटे प्रोफ़ेशनल कोर्स आयोजित करना आदि इनकी जिम्मेदारियों में शामिल होंगे।
- स्कूल कॉम्प्लेक्स के सभी विद्यालय अपने-अपने विद्यालयों के लिए शिक्षा सत्र के लिए अकादमिक योजना बनायेंगे। इससे पहले कॉम्प्लेक्स के विद्यालयों के सभी प्रधान आपस में मिलकर इस योजना के सामान्य सिद्धान्तों पर चर्चा करके आम सहमति बना लेंगे।
- देश में सरकारी प्राथमिक विद्यालयों का आकार बहुत छोटा है, जिससे विद्यालयों में लीव टीचर (Leave Teacher) की व्यवस्था करना व्यवहारिक नहीं है। प्राथमिक विद्यालयों में शिक्षक के अवकाश पर चले जाने पर ऐसे शिक्षक के स्थान पर स्थानापन्न शिक्षक की व्यवस्था कर पाना बहुत ही कठिन काम हो जाता है। विशेषकर, एकल शिक्षक वाले विद्यालयों में इस प्रकार की व्यवस्था करना चुनौती बन जाती है। इन विद्यालयों के शिक्षकों के छुट्टी पर चले जाने से प्रायः विद्यालय बंद हो जाते हैं। (वर्तमान में निकटवर्ती विद्यालय से शिक्षक की व्यवस्था, ऐसा न हो पाने पर आगनवाड़ी कार्यकत्री या फिर भोजनमाता से *विद्यालय खोलने की व्यवस्था* की जाती है।) आयोग का विचार था कि स्कूल कॉम्प्लेक्स के केन्द्रीय माध्यमिक विद्यालय में रिज़र्व टीचर की उपलब्धता होने पर, इस प्रकार की स्थितियों में इन शिक्षकों को आवश्यकतानुसार ऐसे विद्यालयों में शिक्षण कार्य के लिए भेजा जा सकता है।[5]
- चयनित स्कूल कॉम्प्लेक्स को नई पाठ्य पुस्तकों, शिक्षक संदर्शिकाओं एवं शिक्षण उपकरणों को ट्राई आउट (try out) करने एवं मूल्यांकन करने के लिए चिन्हित किया जा सकता है। इसी प्रकार से चयनित स्कूल कॉम्प्लेक्स को निर्धारित सीमा में विषय एवं विषय की पाठ्यचर्या को परिष्कृत (modify) करने की अधिकारिता दी जा सकती है। जिला शिक्षा अधिकारी के अनुमोदन के पश्चात ये कॉम्प्लेक्स पाठ्यक्रम एवं पाठ्यचर्या को परिश्कृत कर सकते हैं।

प्रस्तावित राष्ट्रीय शिक्षा नीति के प्रारुप (ड्राफ्ट) में पृष्ठ 217 से पृष्ठ 243 तक अध्याय 7 के अन्तर्गत स्कूल कॉम्प्लेक्स के माध्यम से प्रभावी गवर्नेंस और कुशल संसाधन उपलब्धता शीर्शक के अन्तर्गत बिन्दु 7.1 से लेकर बिन्दु 7.7 तक स्कूल कॉम्प्लेक्स से संबंधित विभिन्न मुद्दों पर चर्चा की गयी है। जैसे-छोटे स्कूलों का अलगाव समाप्त करना, स्कूलों को बेहतर संसाधन उपलब्ध कराना, एकीकृत शिक्षा को बढ़ावा देना, शिक्षकों के लिए बेहतर सहयोग, स्कूल कॉम्प्लेक्स का प्रशासन एवं प्रबन्धन, इसके माध्यम से प्रभावी गवर्नेंस तथा स्कूल कॉम्प्लेक्स के प्रत्येक विद्यालय का प्रभावी गवर्नेंस एवं प्रबन्धन। यहां पर उल्लेख करना समीचीन होगा कि कोठारी आयोग द्वारा दिए गए महत्वपूर्ण सुझाव' विद्यालय कॉम्प्लेक्स को यथासंभव सत्ता/अधिकारिता (authority) का प्रतिनिधायन' का कहीं भी उल्लेख नहीं किया गया है।

स्कूल काम्प्लेक्स स्थपना के उद्देश्य- इस ड्राफ्ट में स्कूल कॉम्प्लेक्स के उद्देश्यों के बारे में कहा गया है ''स्कूलों के समूहों को स्कूल कॉम्प्लेक्स का रुप दिया जाना, जिससे संसाधनों का साझा उपयोग सुगम बने और स्थानीय स्तर पर कुशल एवं प्रभावी गवर्नेंस सुनिश्चित हो।''[6]

ड्राफ्ट में देश के प्रारम्भिक विद्यालयों की वस्तु स्थिति को स्वीकार किया गया है। इसमें कहा गया है कि ''देश के 28 प्रतिशत सरकारी प्रथमिक विद्यालयों एवं 14.8 उच्च प्राथमिक विद्यालयों में 30 से भी कम बच्चे नामांकित हैं। देश के 1,19,303 सरकारी प्रारम्भिक विद्यालयों में केवल एक शिक्षक कार्यरत हैं, इनमें से 94,028 सरकारी प्राथमिक विद्यालय हैं। ड्राफ्ट में कहा गया है कि हर बसाहट के एक किमी0 के दायरे में एक प्राथमिक स्कूल उपलब्ध होने के सिद्धान्त ने स्कूल तक पहुंच को सुनिश्चित किया परन्तु इसने दूसरे महत्वपूर्ण मुद्दों एवं चुनौतियों को भी जन्म दिया। मुख्य रुप से तीन गंभीर किस्म की चुनौतियों की चर्चा की गयी है।

प्रथम: बहुत कम संख्या वाले स्कूलों का संचालन जटिल होने के साथ-साथ आर्थिक दृष्टि से व्यावहारिक नहीं है, अच्छे स्कूलों को चलाने के लिए जितने संसाधनों की आवश्यकता होती है, उतना छोटे स्कूलों के लिए संभव नहीं होता। उल्लेखनीय है कि बच्चों के लिए निःशुल्क एवं अनिवार्य शिक्षा के अधिकार के अन्तर्गत राज्य की जवाबदेही के बरअक्स विद्यालयों की आर्थिक व्यवहार्यता को प्रस्तुत करने की कोशिश एवं मंशा इसमें महसूस की जा सकती है।

द्वितीय: स्कूलों की बड़ी संख्या, स्कूलों का भौगोलिक फैलाव और वहां पहुंच पाने में आने वाली चुनौतियां। किसी भी प्रयास का सभी स्कूलों में समान रुप से पहुंच पाना कठिन है परन्तु यहीं पर यह कहना अनुचित नहीं होगा कि भारत जैसे विशाल देश में स्कूलों की बड़ी संख्या और इनका बहुत बड़े भौगोलिक क्षेत्र में फैलाव, एक जरुरी वास्तविकता है और यह बच्चों के शिक्षा के अधिकार के प्रति राज्य की प्रतिबद्धता का द्योतक है। स्कूलों तक पहुंच बनाने में आने वाली चुनौतियां एक प्रशासकीय पहलू है। क्यों न विद्यालयों को इतना सक्षम, समर्थ, जिम्मेदार एवं जवाबदेह बनाया जाए कि प्रशासकीय निरीक्षण एवं नियंत्रण की आवश्यकता न्यूनतम रह जाए।

तृतीय: कम शिक्षक एवं कम छात्र संख्या वाले स्कूलों का शैक्षणिक गुणवत्ता की दृष्टि से उपयुक्त न होना। ड्राफ्ट इसके लिए तर्क देता है कि सीखने के उचित माहौल के लिए समान उम्र के कम से कम 15 छात्रों के समूह की आवश्यकता होती है। छोटे स्कूल की वजह से शिक्षक अलग-थलग पड़ जाते हैं, उनका पेशेवराना विकास बाधित होता है।[7] कम से कम 15 छात्रों के समूह की आवश्यकता के तर्क का आधार शिक्षणशास्त्रीय होने के बजाय विद्यालय की आर्थिक व्यवहार्यता की ओर झुका हुआ नज़र आता है। शिक्षक समूह में ज्यादा बेहतर एवं प्रभावी ढ़ंग से काम करते हैं। शिक्षक के अलग-थलग पड़ जाने का तर्क फिर भी ग्रहणीय है, इसमें भी विद्यालय का एकल शिक्षक तो स्कूल कॉम्प्लेक्स बन जाने के बाद भी क्या अलग-थलग नहीं रह जाएगा? प्रत्येक विद्यालय में न्यूनतम दो शिक्षकों की व्यवस्था करने की ज़रुरत है, चाहे विद्यालय में छात्र संख्या 30 से कम ही क्यों न हो। शिक्षा का अधिकार अधिनियम 2009 इस बारे में स्पष्ट निर्देश भी देता है।

स्कूल कॉम्प्लेक्स की स्थापना के लक्ष्य: ड्राफ्ट में स्कूल काम्प्लेक्स के लक्ष्यों को निम्नवत रेखांकित किया गया है[8] -

- स्कूल के प्रधानाचार्य और शिक्षकों को परस्पर सहयोग उपलब्ध कराना, जिससे उनका अलगाव समाप्त हो।
- शिक्षक, संस्था प्रधान और सहयोगी स्टाफ के जीवन्त समूहों का विकास करना।
- स्थानीय स्तर के सभी बच्चों की आरम्भिक बाल्यावस्था शिक्षा से लेकर कक्षा 12 तक की शिक्षा को एक सूत्र में बांधना।
- पुस्तकालय, विज्ञान प्रयोगशाला और उपकरण, कम्प्यूटर लैब, खेल सुविधाओं आदि संसाधनों का साझा उपयोग करना।
- स्कूल कॉम्प्लेक्स द्वारा छोटे स्कूलों का अलगाव समाप्त करना।

स्कूल काम्प्लेक्स की स्थापना के लक्ष्यों के संदर्भ में विशेश रुप से उल्लेखनीय है कि कोठारी आयोग की अनुशंसा के अनुरुप, इसके लक्ष्यों के दायरे के अन्तर्गत विद्यालयों को स्वायत्तता, अकादमिक अनुश्रवण, काम्प्लेक्स के शिक्षकों का पेशेवर विकास जैसे महत्वपूर्ण मुद्दों की अनदेखी की गयी है।

प्रक्रिया: ड्राफ्ट में स्कूल कॉम्प्लेक्स के गठन की प्रक्रिया के बारे में कहा गया है कि बहुत से सार्वजनिक क्षेत्र के स्कूलों को एक साथ लाकर एक संस्थानिक और प्रशासनिक ईकाई का गठन किया जायेगा। इसमें भौतिक रुप से स्कूलों का स्थान परिवर्तन नहीं होगा और प्रशासनिक रुप से स्कूल कॉम्प्लेक्स का भाग होने के बावजूद हरेक स्कूल का अलग संचालन जारी रहेगा। स्कूल कॉम्प्लेक्स सार्वजनिक शिक्षा व्यवस्था के शैक्षिक प्रशासन की बुनियादी ईकाई होगा और इस रुप में ही उसका विकास किया जायेगा। 'स्कूल काम्प्लेक्स राज्य सरकार के हर स्तर पर प्रशासकों को ज्यादा प्रभावी रुप से कार्य करने में मददगार होगा क्योंकि स्कूल काम्प्लेक्स को एक ईकाई माना जाएगा।'[9] ऐसा प्रतीत होता है कि स्कूल कॉम्प्लेक्स के गठन का अहम मकसद विद्यालयों में प्रशासन की लगाम को अधिक से अधिक मज़बूत बनाना है। वर्तमान में विद्यालयों की समस्या प्रशासनिक नियंत्रण कम होने की नहीं है वरन् यह तो पहले से ही बहुतायत में है। मुख्य ज़रुरत है विद्यालयों को अधिकाधिक अकादमिक अनुसमर्थन देने की। स्कूल कॉम्प्लेक्स एवं इसके विद्यालयों को अकादमिक अनुसमर्थन देने की जवाबदेही किसकी होगी? इसका मैकेनिज़्म क्या होगा? इस बारे में ड्राफ्ट कोई स्पष्ट दिशा-निर्देश नहीं देता और न ही इस बारे में कोई संकेत करता है।

स्कूल कॉम्प्लेक्स की संरचना: स्कूल काम्प्लेक्स में एक माध्यमिक स्कूल (कक्षा 9 से कक्षा 12 तक) तथा उसके पड़ोस में स्थित पूर्व प्राथमिक से लेकर कक्षा 8 तक के सरकारी स्कूल होंगे। सभी स्कूलों का चयन उनकी एक दूसरे से नज़दीकी के आधार पर किया जायेगा, जिससे तार्किक रुप से उचित भौगोलिक समूह बने। यदि किसी कारणवश एक कॉम्प्लेक्स में कोई भी माध्यमिक स्कूल नहीं हो, जहां कक्षा 9 से 12 तक शिक्षण होता है तो किसी भी स्कूल में इन कक्षाओं की शुरुआत की जाएगी। राज्य सरकारों से अपेक्षा की गयी है कि वर्ष 2023 तक स्कूलों के स्कूल काम्प्लेक्स के रुप में गठन की प्रक्रिया पूरी करेंगी। स्कूल कॉम्प्लेक्स का प्रधान माध्यमिक स्कूल का प्रधानाचार्य होगा। उसे प्रशासनिक, वित्तीय और अकादमिक अधिकार होंगे। जिसके निर्देशन में कॉम्प्लेक्स के दूसरे स्कूलों के मुख्य अध्यापक/प्रधानाचार्य काम करेंगे। वे मिलकर एक टीम गठित करेंगे जो कॉम्प्लेक्स के प्रत्येक स्कूल में गुणवत्ता में सुधार के लिए ज़िम्मेदार होंगे तथा विद्यालयों में नामांकन बढ़ाने और ड्राप आउट को कम करने के लिए जवाबदेह होंगे। यहां पर उल्लेख करना समीचीन होगा कि देश के सभी स्कूलों के स्कूल कॉम्प्लेक्स के रुप में गठन से पहले पाईलट रुप में पहले देश के प्रत्येक ज़िले में एक

स्कूल कॉम्प्लेक्स का गठन किया जाए। इससे प्राप्त अनुभवों एवं इन स्कूल काम्प्लेक्सों के प्रधानों और एक कॉम्प्लेक्स के सभी विद्यालयों के प्रमुखों से प्राप्त फ़ीडबैक के आधार पर कार्ययोजना को परिमार्जित (improvised) करके पूरे देश में इसे लागू किया जाना चाहिए। इसके लिए ड्राफ्ट में वर्ष 2023 तक की समय सीमा भी निर्धारित की गयी है। इससे, देश के सरकारी विद्यालयों की कार्य प्रणाली में व्यापक बदलाव की अपेक्षा की गयी है। अतः इसको लागू करने से पूर्व सकारात्मक फ़ीडबैक एवं पर्याप्त तैयारी की आवश्यकता होगी।

स्कूल कॉम्प्लेक्स के परिप्रेक्ष्य में सकारात्मक प्रस्तावः ड्राफ्ट में स्कूल काम्प्लेक्स गठन एवं प्रबन्धन के परिप्रेक्ष्य में सकारात्मक उम्मीद बंधाने वाले प्रस्ताव भी हैं, जिनकी चर्चा करना भी समान रुप से जरुरी है। इनमें से निम्नांकित उल्लेखनीय हैं-

- देश में ऐसे बहुत कम स्कूल हैं, जहां सहायक कर्मचारी नियुक्त होते हैं। इसलिए सभी प्रकार के काम चाहे मध्यान्ह भोजन हो या स्कूल के लिए आवश्यक सामग्री की व्यवस्था करना, शिक्षकों को ही करने पड़ते हैं। निदेशक विद्यालयी शिक्षा द्वारा स्कूल कॉम्प्लेक्स को प्रर्याप्त संख्या में सहायक कर्मचारी उपलब्ध कराए जायेंगे, जिससे स्कूल कॉम्प्लेक्स सुचारु रुप से कार्य कर सकें। ये कर्मचारी लेखा कार्य, सामान्य प्रशासन जैसे कामों और आधारभूत सुविधाओं की स्वच्छता एवं रख-रखाव के लिए भी होंगे।[10]
- स्कूल कॉम्प्लेक्स के प्रत्येक विद्यालय के मुख्य अध्यापक/प्रधानाचार्य स्कूल के कार्यकारी प्रधान होंगे और उन पर स्कूल के समस्त अकादमिक एवं प्रशासनिक मामलों की जिम्मेदारी होगी। ये शैक्षणिक परिणामों के लिए और स्कूल संचालन की शुचिता बनाए रखने के लिए एस.एम.सी. के प्रति जवाबदेह होंगे। स्कूल नेतृत्व का चयन उपयुक्त अधिकारियों द्वारा किया जाएगा और यह चयन वरिष्ठता के आधार पर न होकर काबिलियत के आधार पर होगा।[11]
- स्कूल कॉम्प्लेक्स सहकर्मियों के परस्पर सहभागिता से सीखने वाले समूहों के लिए ज़रुरी व्यवस्थाऐं बनाएगा, जैसे- शिक्षकों की साप्ताहिक बैठकें, शिक्षक अधिगम केन्द्र (Teacher Learning Center) आदि। शिक्षकों के सतत् व्यावसायिक विकास (Continuing Professional Development) के लिए दूसरे माध्यम भी उपलब्ध कराए जायेंगे, जैसे-सेमिनार, शैक्षिक भ्रमण, कक्षा-शिक्षण के दौरान परामर्श।[12]
- लोगों के हांथ में अधिकार देना वह सीधा रास्ता है, जिससे स्थानीय समस्याओं को प्रभावी ढ़ंग से दूर किया जा सकता है।[13] फिर भी स्कूल गवर्नेंस के कार्य में एस.एम.सी. द्वारा अपेक्षित सक्रिय भागीदारी की स्थिति अभी वास्तविकता नहीं बन पाई है। ड्राफ्ट में यह स्वीकार करने का साहस किया गया है कि माता-पिता में जागरुकता की कमी, दैनिक मज़दूरी पर आश्रित माता-पिता का एस.एम.सी. की बैठकों में भाग लेने में असमर्थता, महिलाओं की भागीदारी न हो पाना प्रमुख कारण हैं। अक्सर एस.एम.सी. की बैठकें आयोजित नहीं होती, अपर्याप्त प्रतिनिधित्व के साथ होती हैं और इसका स्कूल के मामलों पर कोई प्रभाव नहीं पड़ता है। पिछले दो दशकों में सामाजिक-आार्थिक रुप से मध्यम और उच्च मध्यम वर्ग के अधिकांश लोग अपने बच्चों को निजी स्कूलों में ले गए हैं। इस प्रकार सरकारी स्कूलों में वही लोग बचे हैं, जो बहुत कम राजनीतिक और आर्थिक प्रभाव रखते हैं। ड्राफ्ट में प्रस्तावित किया गया है कि स्कूल कॉम्प्लेक्स में स्कूल कॉम्प्लेक्स मैनेजमेंट कमेटी (School Complex Management Committee) गठित की जाएगी। इस प्रकार के स्कूलों में सामुदायिक सहभागिता वाला मॉडल स्कूल कॉम्प्लेक्स में भी लागू किया जायेगा। इसके गठन का आधार अपेक्षाकृत व्यापक होगा, जिसमें कॉम्प्लेक्स के सभी विद्यालयों एवं उनके सेवित क्षेत्रों का प्रतिनिधित्व होगा। यह स्कूलों में नियमित उपस्थिति, स्कूल में बच्चों के प्रति व्यवहार, स्कूल के संसाधनों का सदुपयोग एवं ईमानदारी जैसे मामलों पर नजर रखेंगी। शिक्षकों/विद्यालय प्रमुखों के आचार व्यवहार का वार्षिक मूल्यांकन करेगी। यह एक अच्छी पहल साबित हो सकती है, बशर्ते कि एस.सी.एम.सी. का इस बारे में प्रयाप्त अभिमुखीकरण एवं क्षमता संवर्द्धन किया जाए। इसके अभाव में राजनीतिक हितसाधन का माध्यम बनने का जोखिम इसमें निहित है।
- डिस्ट्रिक्ट ऐजुकेशन कमेटी/जिला शिक्षा परिषद, एस.एम.सी. एवं एस.सी.एम.सी. के संचालन एवं सशक्तीकरण के कार्य में मदद करेगी। यह दूसरे विभागों जैसे-महिला और बाल विकास विभाग, स्वास्थ्य विभाग, उच्च शिक्षा विभाग के साथ समन्वयन को संभव बनाएगी। इसके द्वारा की गयी समीक्षाओं का उपयोग स्कूली शिक्षा में शिक्षकों, प्रधानाचार्यों, सामाजिक कार्यकर्ताओं, सलाहकारों, स्कूल और स्कूल कॉम्प्लेक्स आदि के अच्छे प्रयासों और योगदान की पहचान करने और उन्हें पुरस्कृत करने के लिए भी किया जायेगा।[14] इससे स्कूल के प्रति विभागों की क्रियाशीलता में वृद्धि होगी तथा नवाचारी प्रयासो को समर्थन एवं मान्यता भी मिल सकेगी परन्तु स्कूल की अकादमिक स्वायत्तता को प्रशासनिक दख़लन्दाजी प्रतिकूल रुप से प्रभावित न करने पाए, इस बारे में सावधानीपूर्वक दिशा-निर्देश तैयार करने की ज़रुरत है।
- डाफ्ट में स्कूल कॉम्प्लेक्स में सलाहकार/परामर्शदाता की व्यवस्था करने की बात कही गयी है। ये छात्रों को मानसिक स्वास्थ्य एवं व्यावसायिक मार्गदर्शन हेतु परामर्श देंगे। इसके लिए शिक्षा और स्वास्थ्य विभाग में परस्पर समन्वय की बात कही गयी है। साथ

ही कहा गया है कि कुछ शिक्षकों एवं सामाजिक कार्यकर्ताओं को इसके लिए प्रशिक्षित किया जा सकता है। वर्तमान में स्कूलों में बच्चों का नियमित स्वास्थ्य परीक्षण ही बड़ी चुनौती है। विशेशज्ञ सलाहकार के बजाय शिक्षकों/सामाजिक कार्यकर्ताओं को फ़ौरी प्रशिक्षण देकर जिम्मेदारी देने से यह व्यवस्था अपने उद्देश्यों को प्राप्त करने में कितना सफल हो पाएगी? यह एक गंभीर एवं चिन्तनीय प्रश्न है।

उपरोक्त सकारात्मक प्रस्तावों के बावजूद ड्राफ्ट में स्कूल कॉम्प्लेक्स के बारे में प्रस्तुत प्रस्तावों से अकादमिक शंका/संदेह भी सृजित होते हैं। चूंकि अभी ये विचार ड्राफ्ट की शक्ल में हैं और सुझावों की अपेक्षा भी है। इसलिए, इनको लिपिबद्ध कर लेना समाचीन होगा। इसमें से कुछ प्रमुख निम्नवत रेखांकित की जा सकती हैं-

- स्कूलों को समूहों में गठित करने के कार्य में ऐसे स्कूलों की समीक्षा और समेकन किया जाएगा जिनका बहुत कम नामांकन है, उदाहरण के लिए 20 से कम होने की वजह से स्वतंत्र ईकाई के रुप में अस्तित्व व्यावहारिक नहीं है।[15] सरकारी विद्यालयों में कम नामांकन के मूल कारणों पर प्रहार करने के बजाए परिणाम आधारित निर्णय दूर दराज के कम नामांकन वाले स्कूलों को बंद करने की योजना को बल देता है। यह बच्चो के निःशुल्क एवं अनिवार्य शिक्षा के मौलिक अधिकारों को बाधित करने वाला प्रस्ताव प्रतीत होता है।
- स्कूल कॉम्प्लेक्स को इस तरह से गठित किया जाएगा कि उनमें शिक्षकों की संख्या 80 से 100 तक होगी जिससे शिक्षकों का एक सशक्त समुदाय बन सके।[16] देश के बहुत बड़े भू-भाग की भौगोलिक स्थितियां इस तरह की हैं कि स्कूलों का दूर-दूर तक छितराव है, उत्तराखण्ड जैसे पर्वतीय राज्य के संदर्भ में यह एक वास्तविकता है। 80 से 100 तक शिक्षकों के मानक को लागू करने में स्कूल कॉम्प्लेक्स का फैलाव एक बहुत बड़े भौगोलिक क्षेत्र तक हो जाएगा, जिसका कॉम्प्लेक्स से तालमेल बिठा पाना बहुत मुश्किल हो जाएगा। यह एक तरह से संकुल का स्वरुप ग्रहण कर लेगा। हमारे हालिया अनुभव बताते हैं कि संसाधन एवं जरुरी क्षमता के अभाव में संकुल व्यवस्था बहुत कामयाब साबित नहीं हो पाई और सूचनाओं के आदान-प्रदान की ऐजेन्सी मात्र बनकर रह गयी। स्कूल कॉम्प्लेक्स, संकुल व्यवस्था से किस प्रकार से अलग होंगे, इसकी स्पष्टता आवश्यक है।
- राज्य भौगोलिक आधार पर सी.आर.सी. को स्कूल कॉम्प्लेक्स का ही अंग बनाने पर विचार कर सकते हैं। इसका अर्थ होगा कि सी.आर.सी. के संसाधन भी स्कूल कॉम्प्लेक्स को उपलब्ध होंगे।[17] सी.आर.सी. के पास संसाधन ही कितने हैं? और स्कूल कॉम्प्लेक्स एवं सी.आर.सी. के कार्य दायित्व एवं भूमिका द्वन्द्व को किस प्रकार से संबोधित किया जाएगा, इसका ख़ुलासा ड्राफ्ट में नहीं किया गया है।
- स्कूल कॉम्प्लेक्स की शिक्षा आयोग (1964-66) द्वारा की गयी परिभाशा जो मूल रुप से छोटे स्कूलों के अलगाव ख़त्म करने और शैक्षिक उपलब्धियों को बेहतर करने पर केन्द्रित थी, को वर्तमान संदर्भ में विस्तृत अर्थ दिया जाएगा।[18] यह विस्तृत अर्थ किस प्रकार दिया जाएगा, इसका ड्राफ्ट में कहीं स्पष्टीकरण नहीं मिलता है। इससे संदेह पैदा होता है कि स्कूल कॉम्प्लेक्स के बारे में कोठारी आयोग द्वारा दिय गये विचार को डाईल्यूट (dilute) करके इसका उपयोग आर्थिक रुप से अव्यवहार्य बताए गए कम संख्या वाले स्कूलों को बंद करने के लिए तो नहीं किया जाएगा।
- स्कूल कॉम्प्लेक्स में सामाजिक कार्यकर्ताओं की भूमिका को चिन्हित किया गया है। उनसे अपेक्षा की गयी है कि वे ड्रॉप आउट बच्चों को स्कूलों में वापस लाने के लिए काम करेंगे। विशेश आवश्यकता वाले बच्चों की पहचान करने और उनका ध्यान रखने में शिक्षकों की मदद करेंगे। शिक्षा के अधिकार अधिनियम के अन्तर्गत ड्रॉप आउट बच्चों को शिक्षा की मुख्यधारा में लाने के लिए संस्था/अधिकारी चिन्हित किये गये हैं। दूसरा विशेश आवश्यकता वाले बच्चों की पहचान एवं ध्यान रखने के लिए विशेशज्ञता की जरुरत होती है। इसके साथ किसी भी प्रकार की समझौतावादी अप्रोच शैक्षिक लक्ष्यों को एक तरह से पराजित करने का काम ही करेगी।
- ड्राफ्ट में कहा गया है कि स्कूल कॉम्प्लेक्स के कक्षा-कक्षों को स्कूल समय के पश्चात एवं अवकाश अवधि में व्यावसायिक एवं प्रौढ़ शिक्षा की गतिविधियों के लिए उपयोग में लाया जा सकेगा।[19] इसका मैकेनिज़्म क्या होगा? क्या यह भी स्कूल कॉम्प्लेक्स के प्रमुख की जिम्मेदारियों का हिस्सा होगा? क्या कॉम्प्लेक्स स्कूल सामुदायिक केन्द्र बन जाएंगे? इस बारे में ड्राफ्ट में स्पष्टता का अभाव है। समुदाय की सहभागिता एवं सामुदायिक केन्द्र दोनों में बहुत अन्तर है। जहां पहला विद्यालय के लिए बहुत ज़रुरी है वहीं दूसरा कुछ विशेशीकृत चुनौतियां प्रस्तुत करता है। इसके बारे में स्पष्टता बहुत ज़रुरी है।
- बी.ई.ओ./डी.ई.ओं. जैसी प्रशासकीय ढ़ांचे की व्यवस्थाऐं और सी.आर.सी./बी.आर.सी./डाइट जैसे अकादमिक सहयोग के संस्थान स्कूलों के एक समूह के लिए सीधे स्कूल कॉम्प्लेक्स से संपर्क और संवाद द्वारा ज्यादा बेहतर और प्रशासनिक सहयोग कर पाएंगे।[20] यहीं पर उल्लेख करना जरुरी है कि यहां पर स्कूल कॉम्प्लेक्स को बीच की कडी के रुप में देखा जा रहा है जबकि वह अलग नहीं है, कॉम्प्लेक्स सभी स्कूलों से मिलकर बनी ईकाई है। यदि इसे पृथक करके देखने की बात की जा रही है तो स्कूल कॉम्प्लेक्स को तो एक तरह से उक्त संस्थाओं से निर्देश एवं अनुसमर्थन मिल रहा होगा और कॉम्प्लेक्स के अन्य स्कूल अलग-

थलग ही रहेंगे।

समेकन: उपरोक्त विवेचन के आधार पर हम कह सकते हैं कि स्कूल कॉम्प्लेक्स का विचार शिक्षा व्यवस्था को प्रभावी बनाने की दिशा में एक अहम कदम साबित हो सकता है। इसके लिए ज़रुरत इस बात की है कि इसको लागू करते समय जमीनी हकीकतों का भी संज्ञान लिया जाए। जैसे कि पहले भी कहा जा चुका है कि इसको सम्पूर्ण रुप से लागू करने से पूर्व पाईलेट रुप में इसका परीक्षण कर लिया जाए। पाईलेट परीक्षण के अनुभवों एवं फीडबैक के आलोक में ज़रुरी करेक्शन के बाद ही इसे समग्र रुप से लागू किया जाए। शिक्षा व्यवस्था में प्रभावी बदलाव लाने के लिए किसी भी अच्छे विचार का स्वागत किया ही जाना चाहिए, बशर्ते कि इसमें कोई प्रच्छन्न ऐजेण्डा (hidden agenda) शामिल न हो।

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Integrating Non-verbal Communication and Verbal Communication for Developing English Communication Skills among Primary School Children

Abstract

Nonverbal communication (NVC) is a wordless communication. Consciously and unconsciously we make use of NVC in our life. It is a communication of gestures and postures through which we communicate silently. These messages are considered to be more genuine and powerful. NVC is a basic part of communication used in the classroom but it is always ignored by the teachers as they are not aware of its importance. Majority of the population of Himachal Pradesh resides in rural or remote areas. People mostly communicate in mother tongue and Hindi and sschool teachers teach English through the grammar translation method (GTM). English is the language of opportunity but young learners residing in remote areas of Himachal Pradesh do not get the environment to learn and speak the language. This paper tries to establish the importance of using NVC and suggests some ways of how NVC can be used in the classroom along with verbal communication (VC) by the teachers which will help to develop English communication skills among primary students in India in general and Himachal Pradesh in particular.

Keywords: *Nonverbal communication, Verbal communication, Grammar translation method, Mother tongue, Learning environment, English communication skills*

Introduction

Communication is a basic part of our lives. We communicate to exchange and share our thoughts, beliefs, ideas, emotions, knowledge, and skills with others. Communication involves transfer of a message or a piece of information from the sender via a selected channel to the receiver by overcoming lexical and syntactical barriers. This process begins with the sender who has an idea which he/she encodes in the message. Subsequently, the message gets communicated through one or more of the following ways - spoken mode, written communication, video and audio transmission, electronic transmission and non-verbal communication (NVC) such as body language, gestures and expressions. Finally, the receiver sends feedback to the sender. This is how the cycle of communication gets completed and the message is meant to be successfully delivered.

Broadly, communication is divided into two major categories - verbal and nonverbal. According to Penrose and others, "verbal communication (VC) consists of sharing thoughts thought the meaning of words." So, VC is the process of exchange of information or message between two or more persons through written or oral words. On the other hand (Huszti, 2013) defines nonverbal communication (NVC) as a paralinguistic and non-linguistic messages that can be transmitted in conjunction with language or without the aid of language; paralinguistic mechanisms include intonation, stress, rate of speech, and pauses or hesitation; non linguistics behaviour include gestures, facial expressions, and body language, among others. According to Giri (2009).

> "A pioneer in the field of nonverbal communication, Ray Birdwhistell, suggested that most human communication occurs through gestures, postures, positions, and distance. He described a 65 to 35% split between actions and words. Albert Mehrabian, a well-known expert in nonverbal communication, conducted a study on the relationships among the three elements of communication: the verbal, the vocal, and the visual. The verbal refers to the words that are spoken, the message. The vocal refers to the intonation, projection, and resonance of the voice through which the message is conveyed. The visual depicts the nonverbal behaviours while speaking. Mehrabian noted that impact of communication across the three forms as verbal, 7% (words); vocal, 38% (tone of voice, inflection); and visual, 55% (nonverbal physical behaviours)".

NVC can stand all alone to express meaning and it can also sync well with verbal communication to deliver speech or present oneself more appropriately. Allan Pease (1988) considers NVC as a complex process involving people's gesture and body language. Extending it further, Knapp (1978 as cited in Knott, 1979) further adds tactilism (touching behaviour), paralanguage (pitch, stress, intonation and voice quality), proxemics (distance or space), and artefacts (clothing, cosmetic aids) or environmental factors like time, place, climate, noise, and smell to the list of NVC.

Most of the researchers in the past have also found that for a major part of the class teaching time, the communication that happens is NVC but teachers themselves are not conscious of it or simply ignore it. The value of NVC is also underestimated because some teachers either lack the skill of interpreting the non-verbal cues or they do not value them. (Work & Boilean, 1981; Griffin, 1985; Hong-li, 2011; Muchemwa, 2013). So, NVC is underrated as it is not put to optimum use by the teachers in the classroom. The main focus of this paper is on how teachers can use NVC such as gestures, expressions, voice effects and body movements in the classroom for teaching and developing communication skills in English among primary school students in India in general and Himachal Pradesh in particular.

English in the Classroom

In recent years, English has been introduced in government schools of Himachal Pradesh (a state located in the north of India) from class one onwards because all over the country, irrespective of rural or urban areas, need for communication in English and ability to communicate fluently has started being felt. English, in the globalised world, has gained greater importance in commerce, social mobility, science and technology and many other fields. Hence, larger number of users wants to interact and communicate with one another successfully.

But the irony is that about 90% of the population of the state lives in remote-rural areas and is dependent upon agriculture as it is the main source of income and employment. Other than agriculture, the most important part of the economy is horticulture, hydropower and tourism. Hindi and English are the official languages of Himachal Pradesh. However, the majority of the population speaks Hindi and Himachali language. As most of the people reside in rural areas and cannot afford to send their children to English medium schools therefore parents want their children to learn and study in nearby Hindi medium schools. Some of these schools just have one teacher who teaches all the subjects. According to Himachal Pradesh Development Report (p.149), there are 1336 single-teacher primary schools and nearly 25% of them are untrained. Parents want their children to have native like fluency in English. But in reality this remains a dream because English is taught merely as a subject and that too through GTM (Grammar Translation Method). Through rote learning children memorise words, grammar rules and answers; language is not learnt or taught as a skill. Due to this style of teaching most of the learners do tend to score better grades in their examinations but their ability

to speak English remains low. Therefore most of the learners have difficulty in talking in English and are unable to use it for oral communication.

Teaching English has become one of the most important and crucial goals for schools and teachers. Communication in English in Himachal Pradesh is a major problem and is seen as a complex drawback of not being understood or always being misunderstood. On the other hand, poor communication leads students nowhere; their ability to send and receive messages is not up to the mark. In the state, most of the learners are good in writing and reading skills but they are deficient in communicating in English because most of the time the teacher teaches the class through GTM. Due to this learners do not get a chance to speak in the class and at the same time, when a teacher teaches or explains in the target language (i.e. English) then learners find it difficult to grasp. Many teachers rely on verbal words to instruct the classroom to convey meaning. Therefore, most of the instructions in the classrooms are in verbal; the teacher talking time is more than that of the students; basically, it is a teacher-centred classroom because of which the participation of students is negligible and their comprehension level also remains low. Therefore, these young learners just rely on nonverbal cues of the teachers because of their limited verbal skills and vocabulary in the subject.

Role of Teacher and NVC in the Classroom

The role of the teacher is an immensely complex one and communication makes the difference. A teacher plays a very important role in and outside the classroom and acts as a caring parent and an expert learner with knowledge and skills. At a glance, the teacher can recognise students and identify the attentive and interested and distinguish them from the dull and lethargic ones in the class. For this the teacher needs to acts actively and show enthusiasm towards teaching and create a positive learning environment. In the classroom, enthusiastic teachers keep on bringing innovation in their teaching styles through which they engage students, make them feel interested and energetic to learn what they are being taught even if they are teaching in the class. A teacher having good communication skills leaves an everlasting impression on the students, both through VC and NVC. Then only teaching-learning of all four skills of English, viz, LSRW (Listening, Speaking, Reading and Writing) can be possible and students can be expected to communicate in English. For this, the teacher can and should make use of L1(mother tongue) in teaching English. L1 can help to clear the meaning of the English words and lead to much better understanding of the context. Besides this, when using English in the classroom to explain some idea or narrate a story, the teacher should make use of body language, gesture or expressions which will help to make the meaning clearer.

In order to support children to learn English, the teachers need to be fluent and highly competent in their communication skills and proficiently use both VC and NVC in the classroom. It has been observed that in the school, teachers do not know or simply ignore the use of NVC whereas the fact is that body language can support VC and compliment teaching skills because it is the language of expressions and emotions, through which communication takes place between the students and the teachers. Integration of NVC (Nonverbal Communication) and VC (Verbal Communication) in the class can drive away boredom and improve the receptivity of the students. Though verbal communication is a primary way of instruction but too much of verbal communication by the teacher in the class neither make students attentive nor active; rather it makes the class boring as students force themselves to listen to the teacher and they lose their interest in the lesson. Teaching in a monotonous way makes class uninteresting and unexciting. Therefore, if teachers use variation in their

tone and pitch and supplement VC with NVC like eye movement, hand movement, standing posture, it will help them to convey their message clearly, and this will make the class interesting and lively. By maintaining eye contact with every student, the teacher can be sure they are listening actively and physically and mentally present in the class. By scanning the class with their eyes teachers can also read students' facial expressions and body language to determine mood of the class, check discipline behaviour and to judge whether the students understand the lesson and have some queries to clear. Teacher's mobility in the classroom is also important as it allows the teacher to know what all students are doing and it maintains discipline and eliminates disturbances before they take place in the class.

NVC is important in the classroom because these young learners in primary schools rely mostly on body language and to encourage them for learning teachers should show enthusiasm through facial expressions, gestures and exciting tone of voice. The point is substantiated by Yang (2017) who is of the view that, "In classroom teaching, NVC is more important than the verbal one. When teaching, teachers will try their best to arouse the student's interest in learning English. Body language as a secondary means of teaching English is vivid, it can warm up the class atmosphere, help students to understand the point, shorten the distance between the teacher and students, stir the interest of learning English, improving the quality of education." Consciously and unconsciously we make use of NVC but in the classroom teacher need to be aware of using NV cues as consciously as she uses verbal communication (i.e. words) to transmit the message. Miller (1988, p.5) is of the view that "nonverbal messages are likely to be more genuine" but these cannot be controlled as easily as verbal messages. We may control our emotions, but our body movements cannot hide anything; they disclose everything to everybody. The teacher needs to understand the power of NVC in the classroom and they should try to improve their NVC skills to improve students' performance. Use of NV cues in the classroom can motivate or demotivate the students. But on the other hand, teachers' expectations are always linked to encouraging their students through gestures, head nods, eye contact, smile, tone of voice and slightly lean towards the student to listen to their thoughts. In this regards Tai (2014) rightly says, "Body language is one of the rich expressive languages in teaching language, especially English teaching".

Hansen (2010) explained in her article that teachers need to be more than just words. They need to keep a check on the nonverbal message that they are sending to students through proximity, eye contact, gestures, and touch. She is of the view that proximity can be used by teachers to enhance their classroom communication. The teachers should act as facilitators and increase accessibility, build respect and relationship, and keep a record of student's academic and behavioural progress. This way the teachers can focus entirely on what a particular student is trying to communicate. The teacher should maintain eye contact with all the students to ensure they are with him/her, participating in all activities, and in the process understanding the lesson. On the other hand, the teacher can use a hand gesture to pass the information and use attention-getting signals like gesture, eye-contact in the classroom. As there are several gestures, some are universal and some are unique. Therefore during classroom teaching gestures should be used carefully.

In Himachal Pradesh, learning to speak in English seems to be quite challenging for students. Children hesitate to speak in English due to fear of committing errors, and because of the anxiety of being punished or getting scolded in front of the whole class, the students remain silent, making no eye contact with the teacher. "Eye contact can indicate a willingness to communicate or learn. Lack of contact might show a lack of interest or indicate that a student does not

know the answer to a question" (Grubaugh, 1989). At this particular time the teacher should stimulate every student's passion for learning by interacting with them, create an atmosphere in the class where students are motivated, and feel interested in learning. The teacher can also use space and artefacts in the class to create a good learning environment, and build good relationship with the learners. The last point of discussion is some strategies that can be used in teaching English communication using NV in the classroom to the primary students.

Some Strategies of Using NVC in the Classroom

Students belonging to rural parts of Himachal Pradesh are good in copying and reading memorised text but lack in speaking skill which is one of the most important skills to be developed as it open gates to communicate with others and is an eligibility criterion for higher education and or employment. It is observed that students from rural area are shy, introvert, less confident, slow and hesitant in speaking. To develop students' ability to speak teachers should help them to overcome these situations. Classroom is a place for learners where they learn things by making mistakes and the teacher being mentor, guides, supports and give direction. Some strategies that can be used to teach English communication using NVC in the classroom are as follows:

- Body language - Positive body language can foster and assist the student's interest in learning speaking skills in English. The teachers should not only use appropriate body language themselves in the class but also encourage students to make use of it while speaking. They should encourage and motivate every student to participate in class activities like reading aloud, role-play, pantomime, etc, which require effective use of body languages. These activities will help in breaking the barrier of unfamiliarity and it will help in forming better connections and relationships with teacher and students. These activities cannot only help them to speak and perform better but also help them to gain confidence, and decrease their nervousness or phobia.
- Young learners love to sing songs, poems, little rhymes and dance. They are fascinated towards music and rhyming words which help the learners to develop listening and speaking skills. Teaching poems or rhymes to primary students by using hand gesture, facial expressions and body movements can generate interest and motivate them to mime the teacher to learn and speak English better. For example, in a poem 'All about me' by Larry Schultz (Appendix A) in this the teacher can teach students about the parts of the body by performing actions and showing visually ten fingers, ten toes, two ears, one nose, two eyes, and two lips. Afterwards, the students can be asked to perform by asking them to'touch your nose,' touch your ears', 'touch your eyes', and more which will improve their visual and kinaesthetic skills. Similarly, Kids 'Goodbye song' (Appendix B) this song can be sung by giving the tune of Happy Birthday. In this song, teachers can teach students to repeat the word 'good-bye' and wave 'good-bye' by opening hand palm keeping the palm facing out and moving wrist first to the right side then to the left side. Later students can be asked to repeat after teacher words and perform accordingly. In this regard, learners engage their whole body movement in the learning process, get familiar with new words and also increase their focus and attention.
- Other activities like acting out a word or phrase can also be taught. It can be beneficial to learn spoken English. Handouts of scripted one word or phrase like brush your teeth, read a book, drink milk, jumping rope, sleeping, keep quiet, dancing, etc can be used with the students. They can be asked to form a pair accord-

ing to the given script and rehearse their respective parts and thereafter act them out in front of the class. From this activity, students will gain confidence and the teacher, by providing NV feedback (nodding of the head, eye contact, smile, pat on the back) will be able to boost the students. Through this, children will develop a habit of practising daily and improve their speaking skills.

- Paralanguage – According to Alessandra Padula (729, encyclopaedia of communication theory), the term paralanguage (or vocalics) refers to the vocal but non-verbal dimension of communication that characterise the utterance of verbal sequences—for example, stress, pitch, rate, rhythm, volume, and presence of pauses. For instance, simple story reading and story-telling with a lesson and having little vocabulary can be an effective and excellent method in developing all the four language skills among students as there is immense scope of combining both NVC and VC. Moreover, children are always fascinated by storytellers. They enjoy stories in print, audio and audio-visual form. Storytelling is one of the most powerful and appealing tools for learners to develop language-learning skills. Good storytellers use expressive gestures, mimic the characters and make facial expressions which aid in conveying feelings, emotions or moods and actions quite effectively through TPR (Total Physical Response) as it is also part of NVC. They use variation of tone and voice to modulate to emphasise expressions that accompany and explain the action in the story and also use sound effects of laughter, sadness, sounds of birds chirping, gurgling of water, whistling of train and many more; they also use hand gestures to explain directions of moving things to give a real dramatic effect and also make use of body movements to describe characters of the story and their physical features in the story. A good storyteller makes eye contact with every child to build a rapport with the class and makes the class interesting and lively. This develops learners' interest and motivates them to mimic and retell the story to their friends and family members which improves their communicative competence and vocabulary.
- On the other hand, making use of facial expressions like smile, maintaining eye contact, and using hand gestures will make students feel confident, and comfortable and decrease their hesitation and nervousness. Similarly, voice modulation, bodily actions and gesture or expression can be useful in teaching the opposite of the words (Appendix C). For example, 'stress' can be given to indicate the size or to hint at something like making the action 'big' (loud voice) in a big ball and 'small' (soft voice) in a small ball.
- Gesture or expression—Activity cards/flashcards too can be used to teach the vocabulary of gesture, expressions, emotions, names (vegetables, fruits, colours, animals, etc.) and many more which will help them to retain words easily. One flashcard (with a picture on one side and word on the other) can be distributed to each student. One set of students shows the picture on the flashcard to the other set one by one and the latter ones guess the word. If the ones who are guessing fail to identify the picture then they tell the correct answer by flipping it (teacher can help the students to read out the word). Activity cards/flashcards containing the picture and its identification name can be as follows:
- Gesture - hello, bye-bye, thumbs up(well done), handshake, finger on lips(be quiet).
- Expressions - angry, happy, sad, bored, hungry, ill, fear
- Names such as:
  - ✓ Vegetables (ladyfinger, brinjal, pumpkin, potato, tomato, onion, garlic, etc.)
  - ✓ Fruits (apple, banana, grapes, litchi, mango, orange, etc.)

- ✓ Colours (red, blue, green, yellow, black, brown, white)Animals (cat, dog, lion, horse, cow, goat, sheep, hen, monkey, fish)

In this way, teachers can help primary students to teach English communication through actions and can build their vocabulary easily and in a simple manner.

Conclusion

Hence NVC plays a pivotal role in effective classroom communication provided the teacher is aware of its importance. It can enhance teaching and learning of English language as a skill. This can be made more interesting through body movements, activities, or pictures for young children. For better results, and to develop determination and zeal among primary students in the classroom towards oral communication, teachers can use appropriate NVC. Speaking skills can be developed through various activities which are combination of NVC and VC, such as music and rhymes, retelling a story for speaking, activity cards, opposite of words, and more. Through these activities students can easily learn, understand and improve their communication abilities.

So in the context of teaching communication skills, it can be recommended that teachers should be encouraged to use symbols, gestures, expressions, body movement appropriately in the classroom to develop interest and draw attention of the class. Post recruitment training and in-service teacher programme should be organised for teachers' to enhance their knowledge and skills about gestures, facial expressions, tone of voice, as they convey meaning and develop better understanding. Teacher training workshops and orientation courses should be regular and they should be trained to use body language effectively, and get introduced to new pedagogical and classroom processes to deal with young children who are developing their linguistic and cognitive ability. Teachers should also be trained to teach English for Specific Purpose, learn phonetics to ensure correct pronunciation in the class, and make the class more develop student-centred.

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Appendix A

All About Me by Larry Schultz
Ten little finger,
Ten little toes.
Two little ears
And one little nose.
Two little eyes,
That shine so bright.
Two little lips
To kiss you goodnight.
(Source: https://iselschultz.wordpress.com/poem-no-2-all-about-me/)

Appendix B

Good-Bye Song
Good-bye to you,
Goo-bye to you,
Good-bye dear friends,
I'll see you again.
(Source: https://esl-kids.com/songs/goodbyesong.html)

Appendix C

Opposite of the Words
I say a BIG ball, and you say a SMALL ball.
I say STOP, and you say GO.
I say its NEW ball, and you say its OLD ball.
I say come IN, and you say go OUT.
I say run FAST, and you say run SLOW.
I say its DARK, and you say its LIGHT.
I say HOT tea, and you say COLD ice-cream.
I say OPEN the door, and you say CLOSE the door.
I say SOFT ball, and you say HARD bat.
I say LAUGH, and you say CRY.
I say SIT down, and you say STAND up.
I say YES, and you say NO.
I say come NEAR, and you say go FAR.
I say you are a BOY, and you say you are a GIRL.

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Looking Beyond Schools: Analyzing Private Tuition in Schools in the Context of West Bengal

Abstract

There is an increasing growth of the informal education market in school education of which private tuition is one form and this relatively has garnered less attention in research in India. Private tuitions pose a threat to the idea of 'education for all' as mandated by RTE (2009) because it privileges the ones who can afford it at the cost of others. By taking the case of West Bengal, the paper establishes how private tuitions have a variety of implications and effects on society. This includes affecting the school system, the family dynamics and then also creating social unrest among different sections of the society. It has been found that across districts of West Bengal there is variation in terms of percentage of students going for tuition that indicates variation in the determinants of demand. As schools and private tuitions are interdependent, what a child learns in tuitions affect school outcomes particularly because school teachers are also found to be part of this market. Section 28E of RTE (2009) prohibits school teachers from providing private tuition and it needs to be implemented to increase accountability of school teachers, which would partly solve the problem of increasing reliance on private tuition.

Introduction

The debate on school education in India has in recent time been centered on the issue of learning outcome. It has moved away from the long debated issue of access. The …. has intensified since the inception of sustainable development goals (SDGs), which were laid out by UNDP in 2016. Quality education is paramount to achieving these goals, a lot of attention in the policy circle is moved around improving the quality of school education. But improving school quality does not only depend on focusing on what a child learns in school but also on what she learns outside and that includes out of school tuitions. It is a common observation that many students mediate between formal (school) and informal (private tuition) learning spaces. If we lose sight of the growing private tutoring market that affects learning, achieving quality education would be a distant dream. Apart from quality, the issue of access also becomes pertinent again when the private tuition market is analysed based on this market affordability being created between the haves and the have nots (Majumdar, 2014). It also poses a challenge to the Right to Education Act (2009) that mandates equal education for all indian school education system is beset with contradictions. On the one hand, eight million children are out of school (The Economic Times, 2014) but on the other hand, one out of every four students goes for private tuition (NSSO, 2014). This raises doubts on the functioning of the school system and means for school going children the private cost of education is high as out of school expenditure is also necessary (Azam, 2016). What is more intriguing is that the poorer section of the population also goes for private tuition (about 30% of the lowest income quintile group according to NSSO, 2014) does some.

Besides (although) although the burden of tutoring falls heavily on the poorer parents as expenditure on tuition constitutes a high proportion of their educational expenditure (Majumdar, 2014). Research focusing on informal outgrowths has been very few in India (Sujatha, 2014; Azam, 2016) and it is time that it is discussed in policies before we fail to keep track of its pace.

While the overall percentage of students going to tuition in India is 25.4% in India, the pattern and growth of private tuition (across India also known as shadow education) has not been uniform across states. Tripura (82.3%) and West Bengal (79.2%) have been found to have a large section of students going for private tuition according to the NSSO data (2014). These states also have a higher percentage of students going to government schools. Studies based on tutoring (Dang & Rogers, 2008; Davies, 2004) suggest a possible linkage between Government schools and private tuition where government schools and private tuition are taken as one combined strategy versus the enrolment in private school. The states have their own histories of private tuitions and it is important to study the growth and the emergence of the market within their specific context. The paper is therefore an attempt to foreground the burgeoning rise of private tuition in the state of West Bengal reported by NSSO (2014) data by looking at various districts and through media reports. In the next section, the meaning and pattern of private tuition has been explored through various studies in the literature.

Private tuition as a form of 'shadow education': Some insights from the literature

This market which is commonly known as the 'shadow education' market or 'hidden market' or informal market has attracted attention from researchers until recently when the market which was once an informal business organized through personal networks among individual tutors and students got transformed into an industry marked by franchising, marketing and corporate strategies (de Castro & de Guzman, 2014). The tutoring industry is growing at a rate of 7% per year in some countries and globally, is set to surpass $100 billion by 2018, according to Global Industry Analysts Inc, a research firm in San Jose, California.1 In India the coaching industry is a 6.4 billion dollar industry.2 The proportion of students taking private tuition gradually increased from 18.8 % in age group 6-24 in 2007-08 to 25.9% in 2014 (NSSO, 2007-08 and 2014-15). The increasing participation in private tuition by students and the growth of the coaching industry cannot but make us ponder on the kind of impetus it provides to its 'customers' for its smooth functioning. This necessitates probing deeper into the nature of the market and what forces are central to fostering this market by taking parents/students and providers together. Private tuition, also known as shadow education3 can be defined as a "set of educational activities outside formal schooling that are designed to improve a student's chances of successfully moving through the allocation process" (Stevenson & Baker, 1992).

This market has the elements of the commodity market in it. It is easier for a parent to change the tutor if he is not satisfied with the service provided, just as a consumer can change brands of goods if he is not satisfied with the product i.e. the exit cost is low. Operating outside the ambit of formal schools, this market is providing inputs to the students for examinations and jobs. Thus the learning outcome of a student is no more a derivative of schools alone but 'outside' school inputs as well.

1. Accessed on 1st September, 2017 from website: http://www.bbc.com/capital/story/20131016-the-global-tutoring-economy
2 Retrieved from the website: http://www.thehindubusinessline.com/news/education/in-india-private-coaching-is-65billion-business/article3606716.ece
3 Although 'shadow education' is a broader term encompassing all types of tutoring including coaching industry, in this study the shadow education and private tuition is used interchangeably.

This is worrisome as it also sometimes leads to teachers losing motivation to teach in the class and incentivizes them to teach poorly (Biswal, 1999; Jayachandran, 2014).

According to studies one of the reasons that has led to the incidence of private tutoring in developing countries is the poor functioning of government schools (Baker et al., 2001; Glewwe & Kremer, 2006; Chaudhury et al.; 2006) and poor pay of teachers, who then look for additional income. But recent studies in Indian context suggest that it is students from private schools who mainly go for private tuition (Azam, 2016; Banerjee and Wadhwa, 2012). This challenges the assumption that tuition is the preserve of government school students and tuition and govt. school goes together. This poses the question whether this implies that the school system as a whole has failed? Dreze and Sen (2013) have pointed out that teachers' salary in India is much higher than that in China and other East Asian countries and this raises the question about their engagement with tuition. Focusing on the demand side, Sen (2009:14) pointed out in the context of West Bengal that we quote "this development is seen as having resulted from the pursuit of the perceived *competitive* benefits to privately tutored children over others". This "artificially generated essentiality" as Sen (2009) points out is harmful for first generation learners who cannot afford tutoring. There is also an obsession with getting higher marks in exam races which might also be a cause for the reliance on private tuition in the Indian case. As the number of prestigious institutions like IITs is few in numbers, the competition of getting into these institutions is high which results in the high demand for coaching centres. Therefore in the context of China Zhang & Bray (2017) assert that the market has reduced learning into performativity and professionalism and ethical commitments have been devalued in the face of market principles and institutional survival. In Canada, the market is also seen as a school choice by default (Davies, 2004).

It is found that families with better resources are able to secure not only greater quantities but better qualities of tutoring (Bray & Kobakhidze, 2014; Bray, 2007). Some families invest in tutoring for gaining a competitive edge and some (low achievers) see it as a way of passing the exam (Bray, 2007). The difference in the attitudes towards tutoring prompts one to ask how aspirations are different across families coming from different class structures. It is also important to ask how the existence of differentiated nature of the market from high end coaching centres to low end tuition centres is exacerbating inequality in the market. Given the hierarchical nature of the market with different types of providers, the question is how far the families from different backgrounds are able to exercise choice outside the formal schooling market. There is an individuated effort that has surfaced in the sphere of school education wherein parents spare an extra amount either to remedy the learning gap or to provide a competitive edge to their children. The additional expenditure that is incurred indicates that a parent can easily use the 'exit' option instead of raising 'voice' if he is unsatisfied with the service delivered by the school. This can have a serious bearing on school ethos and on people who lack the ability to pay. Thus this market acts like any other goods market where a person can be denied basic right on the basis of his affordability.

The case of private tuition in West Bengal

West Bengal as a case is particularly interesting because of the fact that it has the highest proportion of private tuition goers at the secondary and higher secondary level among the states with a large proportion of students opting for tuition from different institutions. The percentage is 79.45% from government schools, 82.36% from private aided and 72.40 % from private unaided schools. In the context of West Bengal, what we see in general is that students opt for

tuition irrespective of the type of institution (private or government). This questions the relevance of schools in imparting education. As students avail tuition from all types of institutions, it is imperative to ask whether different providers are serving different types of 'clients' located across different institutions. In other words, is the nature of the tutoring market in different types of institutions (private aided, private unaided and government) different and is there a hierarchy in the market for tuition? The market is segmented along income lines as there is a difference of Rs. 1000 in terms of per capita monthly consumption between those who are availing tuition from Government school vis-à-vis private unaided school (calculated from NSSO, 2014-15). One can thus expect that the type of tuition varies between institutions.

If one wishes to extract the possible linkage between the government school goers and private tuition in the districts of West Bengal, one may fail to find such linkages. Table 1 shows the distribution of students across various institutions in several districts of West Bengal and the percentage of private tuition goers in each district. It shows that within the districts of West Bengal, Nadia district (93.7%) has the highest number of private tuition goers and Uttar Dinajpur has the lowest number of private tuition goers (49.8%). This reflects variation within districts. Among all the districts, Bankura makes an interesting case as it has the highest number of students in Government schools and has the second lowest tuition goers. On the other hand, Kolkata has the highest number of students in private unaided schools and is one of the districts with a higher percentage of private tuition goers. This possibly suggests that government schools have been functioning well in Bankura due to which the phenomenon of tuition is less in that district as compared to Kolkata. Also, this argument that the school system solely determines demand for private tuition is clearly false and also questions the rhetoric that private schools function better than government schools. This calls for taking into account the cultural dimension of private tuition apart from looking at schools.

Table 1: Distribution of students across various types of schools and percentage of students going for private tuition

District	Students in Government School (%)	Students in Private aided School (%)	Students in Private Unaided School (%)	Students attending private tuition (%)
Darjeeling	34.41	29.48	36.11	72.9
Jalpaiguri	90.19	1.57	8.25	68.2
Cooch Bihar	98.24	0.00	1.76	73.9
Uttar Dinajpur	94.30	2.52	2.29	49.8
Dakshin Dinajpur	98.24	0.17	1.59	76.9
Maldah	91.18	2.22	5.56	70.9
Murshidabad	95.42	1.36	1.53	77.0
Birbhum	95.47	0.61	3.92	81.6
Barddhaman	88.89	6.49	4.61	91.5
Nadia	94.27	1.34	4.39	93.7
North 24 parganas	78.51	6.30	14.54	84.3
Hooghly	90.89	5.44	3.67	82.0
Bankura	99.58	0.09	0.33	63.3
Puruliya	99.54	0.18	0.28	74.7

District	Students in Government School (%)	Students in Private aided School (%)	Students in Private Unaided School (%)	Students attending private tuition (%)
Howrah	89.35	4.76	5.42	93.0
Kolkata	41.24	18.45	40.31	81.6
South 24 Parganas	77.46	9.87	6.33	83.5
Paschim Medinipur	92.10	0.77	3.56	75.6
Purba Medinipur	94.28	0.43	5.29	82.9

Source: Author's calculation from NSSO (2014)

Table 2 provides further insights by giving percentages of private tuition goers across each type of institution in various districts. It shows that Bankura has all of the 0.09% students going to private tuition from the private unaided schools as against 63% tuition goers from the total number of schools.In Kolkata, it is mostly students from Government schools who opt for private tuition (90%). Thus the two districts provide us with two contrasting cases- in Bankura students from private unaided schools are more reliant on private tuition while Kolkata presents just the opposite picture. These two contrasting cases pose questions on location, type of schools and type of private tutors available at the two sites. The demographic features of the two are different in the sense that Kolkata is urbanized whereas Bankura has 12 Urban Towns (District Census Report, 2011, West Bengal) and urbanization has been slow here. So the question is it the location or absence of suppliers or presence of good quality government schools which makes Bankura different from Kolkata? Also we should ask, if only Urban Bankura and Kolkata were to be compared, would the difference be less stark? These questions need to be answered through qualitative surveys. Literature from other sources, suggests that private tuition is more prominent in the urban areas (Brehm and Silova 2014; Kim & Lee, 2010; Tansel & Bircan, 2006) but it does not throw light on the difference between two urban sites that have different contexts. The difference in tutoring at these two urban sites can illuminate the supply side story. It would be quite interesting to see how the market response at the two different sites might be different due to reasons specific to the particular setting.

Table 2: Percentage of students attending private tuition within each type of school

District	Students in government schools attending private tuition (%)	Students in private aided school attending private tuition	Students in private unaided schools attending private tuition
Darjeeling	66.74	89.57	65.22
Jalpaiguri	68.77	61.14	63.48
Cooch Bihar	74.13		61.30
Uttar Dinajpur	48.89	56.72	62.31
Dakshin Dinajpur	77.25	0.00	62.16
Maldah	70.28	67.06	77.36
Murshidabad	76.16	85.67	98.63
Birbhum	80.93	74.84	100.00
Barddhaman	92.81	76.16	88.21

District	Students in government schools attending private tuition (%)	Students in private aided school attending private tuition	Students in private unaided schools attending private tuition
Nadia	94.34	93.50	78.94
North 24 Parganas	87.70	81.44	66.43
Hooghly	83.85	55.00	77.37
Bankura	63.23	32.83	100.00
Puruliya	74.61	100.00	100.00
Howrah	94.72	86.31	72.72
Kolkata	90.37	83.24	71.90
South 24 Parganas	82.94	94.40	73.26
Paschim Medini-pur	75.05	81.38	85.39
Purba Medinipur	83.93	87.03	63.28
West Bengal	79.45	82.36	72.40

Source: Author's calculation from NSSO (2014)

The Question of Family Dynamics

Another case which merits attention in the context of West Bengal is the issue of gender. Contrary to the case of India, where there is a bias in favour of boys in the investment decision of private education (Azam, 2016; Sahoo, 2017), West Bengal shows that the decision to invest in private tuition is in favour of girls at the secondary (94.7% girls and 91.5% boys)[4] and higher secondary level . Given the fact that private tuition expenditure is discretionary in nature, it can be expected that girls' participation will be less as compared to boys as labour market returns are considered less for girls. The perception generally is that as girls are married off, the returns from girl's education does not accrue to the family but that is not seen here. This observation has to be explained and situat in the context of West Bengal. We can ask if it is a response to the marriage market where educated brides are more in demand for child rearing? As Donner has said that the logic of spending on girl children might be a project of making "ideal committed mothers" who are expected to take charge of child's education as a full time job which requires skills (Donner 2016). This perspective holds true for the middle class mothers in Kolkata as Donner (2016) pointed out. This observation also prompts us to ask how the macro picture of no real gender bias at higher levels of education reflects at micro reality. It is important to probe deeper into the class position of the student, the interaction between choice of school and expenditure on tuition and the type of tutors assigned for the girl child. This involves looking at intra household decision making.

West Bengal gives a different picture where more than 85% students from the lowest quintile group (calculated from NSSO, 2014-15) opt for tuition implying that they are able to afford some form of tuition in this differentiated market.[5] As the market is segmented, it is interesting to see how the aspirations of the people from different social backgrounds meet at the education marketplace where the providers range from high end coaching institutes, to school teachers to unemployed youth. In trying to understand choice, decisions within the family with respect to allocation of resources

4 Calculation based on NSSO data (2014-15) for school education

5 Based on NSSO (2014-15) it has been calculated that even within a particular urban space (Kolkata) private tuition expenditure (annual) varies from Rs.4853.9 in the lowest quintile to Rs.24771 in the highest quintile.

will be of particular interest as West Bengal has more percentage of girls going for private tuition at the secondary level (94% girls as against 91.5% boys). This questioning the kind of tuition availed by them, the expenditure incurred on them and the interaction between the type of school they attend and the type of tutor they avail, would be interesting.

Tracing the root of private tuition in West Bengal

In order to understand the tuition market in West Bengal, it is pertinent to historically trace the developments in education policies in West Bengal which are responsible for shaping the culture of tutoring. In 1983, the Left Government abolished English at the primary level as a strategy to increase enrolment and to decrease dropout mainly for students of rural Bengal. Although the policy increased enrolment it had a far reaching effect which was seen in the increase in private tutoring to supplement learning of English (Roy, 2014) as English is valuable in terms of getting entry into the labour market. The policy was revoked in 2004 with reintroduction of English but by then the demand for tutoring had already set in. Attempts have been taken by the Government of West Bengal to curb the practice of tutoring students by school teachers. In 2001 the Government banned private tuition of regular teachers in government and government aided schools and colleges (SCERT, 2009), but the ban did not seem to be effectively implemented as tutoring became an everyday phenomenon in the lives of children and there are instances of coercing students into tuition classes (*The Telegraph* 2010). Yet another time the ban was reintroduced in 2010 which covered the school teachers of all the boards in Bengal (*Times of India* 2010). Section 28 E of the RTE (Right to Education) Act, also states school teachers' private gain outside the school as a punishable offence. Despite these attempts, private tuition is growing and it appears to be deeply entrenched in the education system.

What is more noteworthy is that the incidence of private tuition has brought about social unrest in some parts of West Bengal between the unemployed youth and the school teachers. In Islampur, members of Unemployed Private Tutors' Association filed a complaint with the head teachers of schools against the school teachers as the school teachers are depriving them of their means of livelihood by taking coaching classes (*The Telegraph 2007*). Similar incident occurred in Murshidabad where unemployed young men moved to the high court to demand action against school teachers engaged in tutoring (*The Telegraph 2006*). Clearly, in West Bengal where the number of educated unemployed is quite high (2.5 million applicants for 6000 government jobs)[6], private tuition is a boon for the unemployed youth as it continues to give them income until they hit a job. On the other hand, there are vested interests in the market in the form of 'star' coaching centres which are remarkably getting visible in urban Kolkata.

Private tuition market in West Bengal thus narrates a complex tale of helplessness of unemployed youth, aspirations of parents from different backgrounds, passage to earn 'extra' income for school teachers, lucrative business opportunities for coaching centres and above all a crisis in the education system.

Some Concerns

The increasing use of 'market' metaphor in education raises concern about the ways school education is changing. While there are changes happening in the mainstream education market with the application of market principles, there exists a parallel market which is growing like a shadow with the mainstream and changing the way education is envisaged today by making children and parents as consumers in the education market. To use Brown's (1990) words, 'parentocracy' characterizes the

6 Accessed from http://www.livemint.com/Politics/Oa4T5XSitV4uugtonxzjjL/25-million-compete-for-6000-govt-jobs-in-West-Bengal.html on 2nd November, 2017.

education system wherein education that the child receives is a function of parents' wealth and wish and not ability or effort of the children. The parallel market i.e. the private tuition market is thus a gateway to exercise choice outside the formal schooling with the ideology of 'parentocracy' paving way for a 'customized' education market based on ability to pay. The culture of competition fuelled by globalization has resulted in families viewing investment in education as a way to get entry into the labour market (Bray, Kwo & Jokić, 2016). On the other hand, there are vested interests in the education market which gets reflected in the growth of various forms of tutoring centres and franchises catering to the demand for customized education (Aurini, 2004). In Japan, Canada, Korea, the United States, Taiwan, Brazil, Australia, corporations such as Kumon, Sylvan Learning Center, Academy for Mathematics and Science, and Oxford learning center have opened hundreds of sites across the country (de Castro & de Guzman, 2014). These forces operating outside the formal schooling shape the decision making and outcomes of formal schools which merit attention because it can have serious bearing on school ethos and reinforce the existing social inequality. There is also an element of coercion with school teachers engaging in tutoring children where the parents are not left with enough choice. The market thus presents us with the complexities of choice or to quote Majumdar (2018) 'there is no alternative (TINA)' situation.

As unemployment has pushed many educated youths to become suppliers in the private tuition market, the market is increasingly becoming one's source of survival as well. There are various ways one can think of tackling this problem. One is to fill the vacant positions in various schools which are under staffed and absorb the unemployed youth. The other is to implement section 28E of RTE (2009) from time to time so that school teachers do not engage in private tuition. If school teachers continue to teach outside school as tutors this would make school education ineffective and will render schools only as certificate issuing authorities.

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माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति

सार

प्रस्तुत शोध कार्य का उद्देश्य माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति का लिंग, आवासीय पृष्ठभूमि तथा उनकी सामाजिक श्रेणी के आधार पर तुलनात्मक अध्ययन करना था। प्रस्तुत शोध कार्य वर्णात्मक सर्वेक्षण शोध विधि पर आधारित है। प्रतिदर्श के रूप शोधार्थी द्वारा उत्तर प्रदेश के जनपद पीलीभीत में अध्ययनरत कक्षा नौ के सत्र 2019-20 (माध्यमिक शिक्षा परिषद्, प्रयागराज, उत्तर प्रदेश) के 98 विद्यार्थियों का चयन साधारण यादृच्छिक न्यादर्शन प्रविधि द्वारा किया गया। आंकड़ों के एकत्रीकरण के लिए शोधार्थी द्वारा डॉ. (श्रीमती) अविनाश ग्रेवाल द्वारा निर्मित वैज्ञानिक अभिवृत्ति मापनी का उपयोग किया गया। यह मापनी पांच बिन्दु लिकर्ट मापनी (पूर्णत: सहमत, सहमत, अनिश्चित, असहमत तथा पूर्णत: असहमत) पर आधारित है। इस मापनी में वैज्ञानिक अभिवृत्ति से जुड़े कुल 20 कथन (10 धनात्मक एवं 10 ऋणात्मक कथन) हैं। शोधार्थी द्वारा एकत्रित आंकड़ों का विश्लेषण करने के लिए प्रतिशत, स्वतंत्र न्यादर्श t-परीक्षण तथा एक-मार्गीय प्रसरण विश्लेषण सांख्यिकीय प्रविधि का उपयोग किया गया है। आंकड़ों के विश्लेषण के पश्चात निष्कर्ष के रूप में प्राप्त हुआ कि माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति का स्तर औसत है। माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति पर लिंग का सार्थक प्रभाव पड़ता है। बालकों की वैज्ञानिक अभिवृत्ति बालिकाओं की वैज्ञानिक अभिवृत्ति से सार्थक रूप से उच्च है। साथ ही कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति पर आवासीय पृष्ठभूमि तथा उनकी सामाजिक श्रेणी का सार्थक प्रभाव नहीं पड़ता है।

मुख्य शब्द: विज्ञान शिक्षा, आवासीय पृष्ठभूमि, सामाजिक श्रेणी, वैज्ञानिक अभिवृत्ति

प्रस्तावना

आधुनिक युग वैज्ञानिकता का युग है। वर्तमान समय में मानव अपने जीवन से जुड़े सभी तथ्यों को विभिन्न कसौटियों पर परखकर स्वीकार करता है। साथ ही वह कार्य कारण सम्बन्ध में विश्वास करता है। प्रत्येक व्यक्ति की किसी भी घटना के प्रति अपनी वैयक्तिक अभिवृत्ति होती है (सैनी, 2017)। अभिवृत्ति, व्यक्ति के उस दृष्टिकोण की ओर संकेत करती है, जिसके कारण वह किसी वस्तु, परिस्थिति, संस्था या व्यक्ति के प्रति किसी विशिष्ट प्रकार का व्यवहार करता है। अभिवृत्ति का विकास जन्मजात नहीं अपितु सामाजिक अंत:क्रिया के परिणामस्वरूप होता है (अनवर एवं इकबाल, 2012)। हमारे मन की वे विशेष वृत्तियाँ जो किसी व्यक्ति, पदार्थ, संस्था, परिस्थिति या विचार के प्रति हमारे आचरण का स्वरूप निर्धारित करती हैं, जिसके कारण हम इन वस्तुओं के प्रति अपनी कोई विशेष धारणा अथवा विचार बना लेते हैं, अभिवृत्ति कहलाती है (भटनागर तथा अन्य, 2013)। अभिवृत्ति सकारात्मक अथवा नकारात्मक दोनों प्रकार की हो सकती है (साल्टा एवं टोजुगर्की, 2004)। क्योंकि व्यक्ति की अभिवृत्ति पर विभिन्न मनोवैज्ञानिक तथा सामाजिक कारकों का प्रभाव पड़ता है। वर्तमान में मानव दिनचर्या का प्रत्येक क्षेत्र वैज्ञानिकता से जुड़ चुका है, अत: उसमें वैज्ञानिक अभिवृत्ति न हो पाने के कारण वह जीवन से जुड़े तथ्यों को विभिन्न कसौटियों पर परखकर सत्यता की जाँच करने में सफल नहीं हो पायेगा साथ ही वह कार्य कारण में भी सम्बन्ध स्थापित नहीं कर पायेगा। अत: उसकी वैज्ञानिक अभिवृत्ति का समुचित विकास किया जाना अति आवश्यक है (पन्नीरसेल्वम तथा मुतामिसेल्वन, 2015)। विभिन्न मनोवैज्ञानिकों ने वैज्ञानिक अभिवृत्ति के अलग-अलग घटक बताएं हैं। एमिना (1986) ने वैज्ञानिक अभिवृत्ति के पांच घटक यथार्थता, जिज्ञासा, मुक्त विचार वाला, वस्तुनिष्ठता तथा अंधविश्वास का विरोध माने हैं (एबल तथा लीडरमैन, 2017)। कुछ अन्य मनोवैज्ञानिकों ने इसके तीन घटक यथा विश्वसनीयता, अनुभूति तथा अनुयोजन बताएं हैं (मुखोपाध्याय, 2014)। बेनेट (2003) ने विज्ञान के प्रति अभिवृत्ति तथा वैज्ञानिक अभिवृत्ति में अंतर को स्पष्ट करते हुए लिखा है कि, विज्ञान के प्रति अभिवृत्ति का सम्बन्ध विद्यार्थियों के उन सभी विचारों तथा संप्रत्ययों से है, जिनका विकास वह विभिन्न पारिस्थितियों में अंतर्क्रियाओं के परिणामस्वरूप विज्ञान के सन्दर्भ में करता है। जबकि वैज्ञानिक अभिवृत्ति, वैज्ञानिक पद्धति से जुड़ा होती है, जो वैज्ञानिक कौशलों की सहायता से समस्याओं को समझने तथा उनको सुलझाने में सहायता करती है।

शोध का औचित्य

वैज्ञानिक तथा तकनीकी के क्षेत्रों में होने वाली नवीन क्रांति ने समाज में विज्ञान शिक्षा को और अधिक महत्वपूर्ण विषय बना दिया है। राष्ट्रीय शिक्षा नीति, 1986 में विज्ञान विषय को विद्यालयी शिक्षा का अभिन्न

अंग मानते हुए इसे पाठ्यचर्या में अनिवार्य करने की बात कही है। विज्ञान, मनुष्य को सत्यता की खोज के लिए स्वतंत्र जाँच करने के अवसर प्रदान करता है (यासर तथा अन्गुन, 2009)। विज्ञान का अध्ययन करने के लिए वैज्ञानिक विधियों की सहायता ली जाती है। ये विधियाँ अधिगमकर्त्ता में वैज्ञानिक अभिवृत्ति का विकास करती हैं। वास्तव में वर्तमान समय में विज्ञान शिक्षा का एक महत्वपूर्ण उद्देश्य विद्यार्थियों में संज्ञानात्मक विकास के साथ-साथ वैज्ञानिक अभिवृत्ति का विकास करना भी है (कैरिन, 1997; ऑस्बर्न सिमोन तथा कॉलिनस, 2003; कौर, 2013; रेवती एवं मीरा, 2017)। वैज्ञानिक अभिवृत्ति किसी भी व्यक्ति की वह विशेषता है, जो किसी भी घटना के घटित होने के पीछे वैज्ञानिक कारणों को मानती है साथ ही वैज्ञानिक विधियों की सहायता से इन कारणों को जानने का प्रयास करती है। वैज्ञानिक अभिवृत्ति जैसे गुण के साथ व्यक्ति अपने वैयक्तिक विकास के साथ-साथ अपने राष्ट्र के सतत् विकास को भी सुनिश्चित करता है (राव, 1996)। इन सभी तथ्यों को ध्यान में रखते हुए शोधार्थी द्वारा माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति को जानने का प्रयास किया गया है।

शोध उद्देश्य

प्रस्तुत शोध अध्ययन में निम्नलिखित शोध उद्देश्यों को सम्मिलित किया गया-

1. माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति का अध्ययन करना।
2. माध्यमिक स्तर पर कक्षा नौ के बालक तथा बालिकाओं की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करना।
3. माध्यमिक स्तर पर कक्षा नौ के ग्रामीण तथा शहरी विद्यार्थियों की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करना।
4. माध्यमिक स्तर पर कक्षा नौ के सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करना।

शोध परिकल्पनाएं

प्रस्तुत शोध अध्ययन में निम्नलिखित शोध परिकल्पनाओं को सम्मिलित किया गया-

1. माध्यमिक स्तर पर कक्षा नौ के बालक तथा बालिकाओं की वैज्ञानिक अभिवृत्ति के माध्य फलांकों में सार्थक अंतर नहीं है।
2. माध्यमिक स्तर पर कक्षा नौ के ग्रामीण तथा शहरी विद्यार्थियों की वैज्ञानिक अभिवृत्ति के माध्य फलांकों में सार्थक अंतर नहीं है।
3. माध्यमिक स्तर पर कक्षा नौ के सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों की वैज्ञानिक अभिवृत्ति के माध्य फलांकों में सार्थक अंतर नहीं है।

शोध में प्रयुक्त चर

प्रस्तुत शोध कार्य में शोधार्थी द्वारा स्वतंत्र चर के रूप में माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों के लिंग, आवासीय पृष्ठभूमि एवं सामाजिक श्रेणी तथा आश्रित चर के रूप में वैज्ञानिक अभिवृत्ति को लिया गया।

शोध विधि एवं प्रक्रिया

प्रस्तुत अध्ययन की प्रकृति वर्णनात्मक है। जिसके सर्वेक्षण विधि का उपयोग किया गया है। सर्वेक्षण विधि का संबंध, वर्तमान परिस्थितियों, प्रचलित विश्वासों, दृष्टिकोण या स्थापित अभिवृत्तियों एवं अभिमतों से होता है। जिसमें किसी क्षेत्र, समूह या संस्था की वर्तमान स्थिति को जानने, विश्लेषित करने तथा प्रतिवेदित करने का प्रयास किया जाता है (गुप्ता, 2017)।

जनसंख्या

प्रस्तुत अध्ययन में जनसंख्या के रूप में उत्तर प्रदेश राज्य के जनपद पीलीभीत में माध्यमिक शिक्षा परिषद्, प्रयागराज (उत्तर प्रदेश) से सम्बद्ध माध्यमिक स्तर के समस्त विद्यालयों में सत्र 2019-20 में अध्ययनरत कक्षा नौ के सभी विद्यार्थियों को सम्मिलित किया गया।

प्रतिदर्शन प्रविधि तथा प्रतिदर्श

प्रस्तुत शोध कार्य में प्रतिदर्श चयन हेतु उत्तर प्रदेश राज्य के जनपद पीलीभीत में माध्यमिक शिक्षा परिषद्, प्रयागराज (उत्तर प्रदेश) से सम्बद्ध माध्यमिक स्तर के विद्यालयों में से दो विद्यालयों का चयन साधारण यादृच्छिक प्रतिदर्शन प्रविधि (लाटरी पद्धति) द्वारा किया गया। इसके लिए शोधार्थी द्वारा सर्वप्रथम जनपद पीलीभीत मुख्यालय में संचालित माध्यमिक विद्यालयों की सूची तैयार की गई। तत्पश्चात इन विद्यालयों के नामों को समान आकार की कागज की पर्चियों पर लिखकर पर्चियों को एक समान मोड़कर एक बॉक्स में डालकर हिलाया गया। इसके बाद शोधार्थी द्वारा यादृच्छिक प्रविधि से दो पर्चियों को उठाकर उनमें लिखे विद्यालयों के नामों को अलग कागज पर लिखा गया। इसके बाद इन दोनों विद्यालयों में अध्ययनरत सत्र 2019-20 के कक्षा नौ के सभी 98 विद्यार्थियों को शोध कार्य में सम्मिलित किया गया। चयनित प्रतिदर्श का पुन: लिंग, आवासीय पृष्ठभूमि तथा सामाजिक श्रेणी के आधार पर किए गए वर्गीकरण को निम्नलिखित तालिका में प्रस्तुत किया गया है-

तालिका क्रमांक 01: विभिन्न स्वतंत्र चरों के आधार पर प्रतिदर्श का विस्तृत स्वरूप

क्र. सं.	स्वतंत्र चर	स्वतंत्र चर के स्तर	संख्या (N)	योग
1.	लिंग	बालक	58	98
		बालिका	40	
2.	आवासीय पृष्ठभूमि	ग्रामीण	54	98
		शहरी	44	
3.	सामाजिक श्रेणी	सामान्य वर्ग	26	98
		अन्य पिछड़ा वर्ग	48	
		अनुसूचित जाति	24	

शोध उपकरण

प्रस्तुत अध्ययन में शोधार्थी द्वारा माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति के मापन हेतु डॉ. (श्रीमती) अविनाश ग्रेवाल द्वारा निर्मित विज्ञान अभिवृत्ति मापनी का उपयोग किया गया। यह मापनी पांच बिन्दु लिकर्ट मापनी (पूर्णत: सहमत, सहमत, अनिश्चित, असहमत तथा पूर्णत: असहमत) पर आधारित है। विज्ञान अभिवृत्ति मापनी का लक्ष्य समूह माध्यमिक स्तर के विद्यार्थी (15-19 आयु वर्ग) हैं। इस मापनी में मुख्य चार आयामों (सकारात्मक बौद्धिकता, नकारात्मक बौद्धिकता, सकारात्मक संवेग तथा नकारात्मक संवेग) को दृष्टिगत रखते हुए कुल 20 कथन हैं, जिसमें 10 धनात्मक एवं 10 ऋणात्मक कथन हैं। इन प्रमुख आयामों को पुन: जिज्ञासा, खुले मस्तिष्क वाला, वैज्ञानिक विधि में विश्वास, कार्य-कारण सम्बन्ध, समीक्षात्मक मष्तिष्क तथा यथार्थता जैसे उप-आयामों में विभक्त किया गया है। इस मापनी के द्वारा विद्यार्थियों की वैज्ञानिक अभिवृत्ति के उपरोक्त प्रमुख चार आयामों तथा इनसे सम्बंधित उप-आयामों का मापन किया जाता है। वैज्ञानिक अभिवृत्ति मापनी का विश्वसनीयता अर्द्ध-विच्छेदन (सम तथा विषम प्रविधि) विधि द्वारा 0.86 तथा परीक्षण-पुनर्परीक्षण (3 माह के अंतराल पर) विधि द्वारा 0.75 प्राप्त की गई। इस मापनी का प्रकाशन नेशनल साइकोलोजिकल कार्पोरेशन, आगरा द्वारा हिंदी भाषा में वर्ष 2012 में किया गया।

वैज्ञानिक अभिवृत्ति मापनी में धनात्मक तथा ऋणात्मक कथनों का वितरण निम्नलिखित तालिका के माध्यम से प्रस्तुत किया गया है-

तालिका क्रमांक-02

क्र. सं.	कथनों की प्रकृति	कथनों की संख्या	मापनी में कथनों की स्थिति
1.	धनात्मक	10	2, 4, 6, 8, 10, 12, 14, 16, 18, 20
2.	ऋणात्मक	10	1, 3, 5, 7, 9, 11, 13, 15, 17, 19

फलांकन प्रक्रिया

शोधार्थी द्वारा विद्यार्थियों पर इस मापनी के पश्चात प्राप्तांकों का फलांकन, फलांकन कुंजी की सहायता से किया गया। विद्यार्थियों की सकारात्मक कथनों पर पूर्णत: सहमत, सहमत, अनिश्चित, असहमत तथा पूर्णत: असहमत क्रमश: 4, 3, 2, 1 एवं 0 अंक और नकारात्मक कथनों पर क्रमश: 0, 1, 2, 3 एवं 4 अंक प्रदान किए गए। इस प्रकार विद्यार्थियों द्वारा मापनी में प्राप्तांकों का न्यूनतम तथा अधिकतम प्रसार 0-80 के मध्य था।

तालिका क्रमांक-03

क्र. सं.	कथनों की प्रकृति	विद्यार्थियों की प्रतिक्रिया तथा उस पर प्रदान किए गए अंक				
		पूर्णत: सहमत	सहमत	अनिश्चित	असहमत	पूर्णत: असहमत
1.	धनात्मक	4	3	2	1	0
2.	ऋणात्मक	0	1	2	3	4

शोध उपकरण का प्रशासन एवं आंकड़ों के संकलन की प्रक्रिया

प्रदत्त संग्रहण हेतु सर्वप्रथम शोधार्थी द्वारा शोध कार्य में चयनित माध्यमिक विद्यालयों के प्रधानाध्यापकों/प्रधानाध्यापिकाओं से अनुमति लेकर कक्षा नौ के विद्यार्थियों के साथ सौहार्दपूर्ण संबंध स्थापित कर उन्हें अपने विज्ञान अभिवृत्ति मापनी से अवगत कराया। तत्पश्चात शोधार्थी द्वारा विद्यार्थियों पर मापनी को प्रशासित किया गया और साथ ही साथ विद्यार्थियों को यह विश्वास दिलाया गया कि उनके द्वारा दी गयी सूचना को गुप्त रखा जाएगा। विद्यार्थियों द्वारा मापनी को पूर्ण करने के लिए 20 मिनट का समय दिया गया। समय सीमा पूर्ण होने के बाद विद्यार्थियों से भरी हुई मापनी का संकलन कर लिया गया।

सभी संकलित मापनियों का फलांकन, परीक्षण नियमावली (Test Manual) की सहायता से किया गया।

प्रदत्तों के विश्लेषण हेतु सांख्यिकीय प्रविधि

प्रस्तुत शोध में समस्त आंकड़ों के विश्लेषण के लिए शोधकर्त्ता द्वारा निम्नलिखित उद्देश्यवार उपयुक्त सांख्यिकीय प्रविधियों द्वारा आंकड़ों का विश्लेषण किया गया –

1. माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति का अध्ययन करने के लिए शोधार्थी द्वारा प्रतिशत सांख्यिकीय प्रविधि का उपयोग किया गया।
2. माध्यमिक स्तर पर कक्षा नौ के बालक तथा बालिकाओं की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करने के स्वतंत्र न्यादर्श t-परीक्षण सांख्यिकीय प्रविधि का उपयोग किया गया।

3. माध्यमिक स्तर पर कक्षा नौ के ग्रामीण तथा शहरी विद्यार्थियों की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करने के लिए लिए स्वतंत्र न्यादर्श t-परीक्षण सांख्यिकीय प्रविधि का उपयोग किया गया।
4. माध्यमिक स्तर पर कक्षा नौ के सामान्य, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करने के लिए एक-मार्गीय प्रसरण विश्लेषण (One Way ANOVA) सांख्यिकीय प्रविधि का उपयोग किया गया।

प्रदत्तों का विश्लेषण एवं व्याख्या

प्रस्तुत शोध में समस्त आंकड़ों के विश्लेषण के लिए शोधकर्ता द्वारा उद्देश्यवार उपयुक्त सांख्यिकीय प्रविधि द्वारा आंकड़ों का विश्लेषण किया गया प्राप्त परिणामों का विस्तृत वर्णन निम्नलिखित है-

1. शोध कार्य के प्रथम उद्देश्य माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति का अध्ययन करने के लिए सभी विद्यार्थियों से प्राप्त आंकड़ों का प्रतिशत के आधार पर विश्लेषण किया गया। जिसका परिणाम निम्नलिखित तालिका में प्रस्तुत किया गया है-

तालिका क्रमांक-04: समस्त विद्यार्थियों की वैज्ञानिक अभिवृत्ति

क्र. सं.	प्राप्तांकों की स्थिति	विद्यार्थियों की संख्या	प्रतिशत	अभिवृत्ति का स्तर
1 .	51 तथा इससे अधिक	32	32.7	उच्च स्तर
2 .	41-50	56	56.1	औसत स्तर
3 .	40 तथा इससे कम	11	11.2	निम्न स्तर
कुल	-	98	100 %	-

उपरोक्त तालिका क्रमांक-04, के अध्ययन से यह स्पष्ट होता है कि माध्यमिक स्तर पर कक्षा नौ के कुल 98 विद्यार्थियों में से 32 विद्यार्थियों के प्राप्तांक 51 या इससे अधिक हैं। 56 विद्यार्थियों के फलांक 41-50 अंकों के मध्य प्राप्त हुए। जबकि 11 विद्यार्थियों को 40 या इससे कम फलांक प्राप्त हुए हैं। चूँकि चयनित न्यादर्श का 56.1% भाग वैज्ञानिक अभिवृत्ति के औसत स्तर से संबन्धित है। इस प्रकार कहा जा सकता हैं कि माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति का स्तर औसत है।

अतः इस तालिका से स्पष्ट होता है कि माध्यमिक स्तर के अधिकांश विद्यार्थी औसत स्तर की वैज्ञानिक अभिवृत्ति रखते हैं।

2. शोध कार्य के द्वितीय उद्देश्य माध्यमिक स्तर पर कक्षा नौ के बालक तथा बालिकाओं की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करने के लिए विद्यार्थियों से प्राप्त आंकड़ों को लिंग के आधार पर व्यवस्थित कर सर्वप्रथम प्राप्तांकों की प्रसामान्यता तथा प्रसरणों की समरूपता की अवधारणाओं की जाँच की गई। प्रसामान्यता तथा प्रसरणों की समजातीयता की अवधारणाओं के संतुष्ट हो जाने के बाद स्वतंत्र न्यादर्श t-परीक्षण सांख्यिकीय प्रविधि की सहायता से आंकड़ों का विश्लेषण किया गया। प्राप्तांकों की प्रसामान्यता, प्रसरणों की समजातीयता की अवधारणाओं की जाँच तथा स्वतंत्र न्यादर्श t-परीक्षण के सांख्यिकीय परिणामों का विवरण निम्नलिखित तालिकाओं में प्रस्तुत किया गया है-

तालिका क्रमांक-05: लिंग के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता का परीक्षण

वैज्ञानिक अभिवृत्ति फलांक	लिंग	कोल्मोगोरोव-स्मिरनोव			शापिरो-विल्क		
		सांख्यिकी	स्वतंत्र्यांश	सार्थकता	सांख्यिकी	स्वतंत्र्यांश	सार्थकता
	बालक	0.077	58	0.200	0.992	58	0.974
	बालिका	0.079	40	0.200	0.982	40	0.768

तालिका क्रमांक-05 के अवलोकन से स्पष्ट होता है कि, बालकों के वैज्ञानिक अभिवृत्ति फलांकों के कोल्मोगोरोव-स्मिरनोव परीक्षण (N>50) का सांख्यिकीय मान 0.077 है। जिसका स्वतंत्र्यांश 58 पर सार्थकता मान 0.200 है। यह मान 0.01 से अधिक है। इसलिए साथर्कता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *बालकों के वैज्ञानिक अभिवृत्ति फलांकों का वितरण प्रसामान्य वितरण से सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि बालकों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता की अवधारणा संतुष्ट होती है।

तालिका क्रमांक-05 के अवलोकन से यह भी स्पष्ट होता है कि, बालिकाओं के वैज्ञानिक अभिवृत्ति फलांकों के शापिरो-विल्क परीक्षण (N<50) का सांख्यिकी का मान 0.982 है। जिसका स्वतंत्र्यांश 40 पर सार्थकता मान 0.768 है। यह मान 0.01 से अधिक है। इसलिए साथर्कता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *बालिकाओं के वैज्ञानिक अभिवृत्ति फलांकों का वितरण प्रसामान्य वितरण से सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि बालिकाओं के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता की अवधारणा संतुष्ट होती है।

तालिका क्रमांक-06: लिंग के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसरणों की समजातीयता का परीक्षण

वैज्ञानिक अभिवृत्ति फलांक	माध्य आधारित	लीवेन सांख्यिकी	स्वतंत्र्यांश 1	स्वतंत्र्यांश 2	सार्थकता
		0.786	1	96	0.378

तालिका क्रमांक-06 के अवलोकन से यह स्पष्ट होता है कि, बालक तथा बालिकाओं के वैज्ञानिक अभिवृत्ति फलांकों के लीवेन परीक्षण का सांख्यिकीय मान 0.786 है। जिसका स्वतंत्र्यांश (1, 96) पर सार्थकता मान 0.378 है। यह मान 0.01 से अधिक है। इसलिए साथर्कता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *बालक तथा बालिकाओं के वैज्ञानिक अभिवृत्ति फलांकों के प्रसरण सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि बालक तथा बालिकाओं के वैज्ञानिक अभिवृत्ति फलांकों की प्रसरण की समजातीयता की अवधारणा संतुष्ट होती है।

चूंकि लिंग के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता तथा प्रसरणों की समजातीयता की अवधारणा संतुष्ट होती है अत: t-परीक्षण के कल्पित प्रसरण समजातीय निर्गमन को व्यवहार में लाकर परिणामों की विवेचना की गई है।

तालिका क्रमांक-07: लिंग के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों का t-परीक्षण

समूह	N	माध्य	मानक विचलन	स्वतंत्र्यांश	t	द्विपुच्छीय सार्थकता मान	टिप्पणी
बालक	58	49.31	6.62	96	2.224	0.028	सार्थक है।
बालिका	40	46.43	5.82				

उपरोक्त तालिका क्रमांक-07 के अवलोकन से स्पष्ट होता है कि माध्यमिक स्तर के कक्षा नौ के बालक तथा बालिकाओं की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करने बालकों की वैज्ञानिक अभिवृत्ति के प्राप्तांको का माध्य 49.31 तथा मानक विचलन 6.62 है। इसी प्रकार बालिकाओं के वैज्ञानिक अभिवृत्ति के प्राप्तांकों का माध्य 46.43 तथा मानक विचलन 5.82 है। बालक तथा बालिकाओं की वैज्ञानिक अभिवृत्ति फलांकों का परिकलित t-परीक्षण का मान 2.224 है, जिसका स्वतंत्र्यांश 96 पर सार्थकता मान 0.028 है। यह मान 0.05 से कम है। इसलिए साथर्कता के 0.05 स्तर पर सार्थक है। अतः शून्य परिकल्पना, *माध्यमिक स्तर के बालक तथा बालिकाओं के वैज्ञानिक अभिवृत्ति के माध्य फलांकों में सार्थक अंतर नहीं है, निरस्त की जा सकती है।* परिणामस्वरूप कहा जा सकता है कि माध्यमिक स्तर पर कक्षा नौ के बालक तथा बालिकाओं के वैज्ञानिक अभिवृत्ति के माध्य फलांको में सार्थक अंतर है।

तालिका के अवलोकन से स्पष्ट होता है कि बालकों के वैज्ञानिक अभिवृत्ति का माध्य फलांक, बालिकाओं के वैज्ञानिक अभिवृत्ति के माध्य फलांक से अधिक है। इस प्रकार कहा जा सकता है कि माध्यमिक स्तर के कक्षा नौ के बालकों की वैज्ञानिक अभिवृत्ति बालिकाओं की वैज्ञानिक अभिवृत्ति की तुलना में सार्थक रूप से अधिक है। जलीन तथा फिलिप (2017) ने माध्यमिक स्तर पर अध्ययनरत विद्यार्थियों की भौतिकी की उपलब्धि तथा वैज्ञानिक अभिवृत्ति के सहसंबंध का अध्ययन किया। इनके शोध का एक प्रमुख उद्देश्य लिंग के आधार पर विद्यार्थियों की वैज्ञानिक अभिवृत्ति की तुलना करना था। अपने शोध परिणाम में इन्होंने पाया कि बालकों की वैज्ञानिक अभिवृत्ति बालिकाओं की तुलना में सार्थक रूप से उच्च है। आहूजा (2017) ने माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति तथा विज्ञान उपलब्धि के सम्बन्ध को जानने के लिए किया गया शोध कार्य भी इस बात की पुष्टि करता है कि बालकों की वैज्ञानिक अभिवृत्ति बालिकाओं की तुलना में सार्थक रूप से उच्च है।

स्वतंत्र न्यादर्श t-परीक्षण के द्वारा शून्य परिकल्पना निरस्त होने पर यह सिद्ध होता है कि माध्यमिक स्तर के कक्षा नौ के बालक तथा बालिकाओं की वैज्ञानिक अभिवृत्ति में सार्थक अंतर है। तालिका क्रमांक-07 के अवलोकन से स्पष्ट होता है कि बालक तथा बालिकाओं का न्यादर्श आकार तथा प्रसरण सामान हैं, अत: वैज्ञानिक अभिवृत्ति के प्रभाव आकार (Effect Size) को ज्ञात करने के लिए कोहेन 'd' प्रभाव आकार माप का उपयोग किया गया। जिसके द्वारा प्राप्त परिणामों का विवरण निम्नलिखित तालिका क्रमांक-08 में प्रस्तुत किया गया है-

तालिका क्रमांक-08: वैज्ञानिक अभिवृत्ति के प्रभाव आकार का विवरण

वैज्ञानिक अभिवृत्ति		विद्यार्थियों की संख्या	माध्य	मानक विचलन	प्रभाव आकार (कोहेन 'd')
समूह	बालक	58	49.31	6.62	0.46 (न्यून प्रभाव)
	बालिका	40	46.43	5.82	

उपरोक्त तालिका क्रमांक- 08 के अवलोकन से स्पष्ट होता है कि परिकलित कोहेन 'd' का निरपेक्ष मान 0.46 है। जोकि कोहेन द्वारा प्रतिपादित प्रभाव आकार मार्गदर्शिका सारणी में दर्शाये गए मान 0.20 से अधिक तथा 0.50 से कम है (कोहेन, 1988)। अर्थात् प्रभाव आकार न्यून है। इसके फलस्वरूप कहा जा सकता है कि माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति पर लिंग का न्यून प्रभाव आकार है।

3. शोध कार्य के तृतीय उद्देश्य माध्यमिक स्तर के कक्षा नौ के ग्रामीण तथा शहरी विद्यार्थियों की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करने के लिए विद्यार्थियों से प्राप्त आंकड़ों को आवासीय पृष्ठभूमि के आधार पर व्यवस्थित कर सर्वप्रथम प्राप्तांकों की प्रसामान्यता तथा प्रसरणों की समरूपता की अवधारणाओं की जाँच की गई। प्रसामान्यता तथा प्रसरणों की समजातीयता की अवधारणाओं के संतुष्ट हो जाने के बाद स्वतंत्र न्यादर्श t-परीक्षण सांख्यिकीय प्रविधि की सहायता से आंकड़ों का विश्लेषण किया गया। प्राप्तांकों की प्रसामान्यता, प्रसरणों की समजातीयता की अवधारणाओं की जाँच तथा स्वतंत्र न्यादर्श t-परीक्षण के सांख्यिकीय परिणामों का विवरण निम्नलिखित तालिकाओं में प्रस्तुत किया गया है-

तालिका क्रमांक-09: आवासीय पृष्ठभूमि के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता का परीक्षण

वैज्ञानिक अभिवृत्ति फलांक	आवासीय पृष्ठभूमि	कोल्मोगोरोव-स्मिरनोव			शापिरो –विल्क		
		सांख्यिकी	स्वतंत्र्यांश	सार्थकता	सांख्यिकी	स्वतंत्र्यांश	सार्थकता
	ग्रामीण	0.086	54	0.200	0.997	54	0.371
	शहरी	0.084	44	0.200	0.990	44	0.961

तालिका क्रमांक-09 के अवलोकन से स्पष्ट होता है कि, ग्रामीण विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों के कोल्मोगोरोव-स्मिरनोव परीक्षण (N>50) का सांख्यिकीय मान 0.086 है। जिसका स्वतंत्र्यांश 54 पर सार्थकता मान 0.200 है। यह मान 0.01 से अधिक है। इसलिए साथर्कता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *ग्रामीण विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों का वितरण प्रसामान्य वितरण से सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि ग्रामीण विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता की अवधारणा संतुष्ट होती है।

तालिका क्रमांक-09 के अवलोकन से यह भी स्पष्ट होता है कि, शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों के शापिरो-विल्क परीक्षण (N<50) का सांख्यिकीय मान 0.990 है। जिसका स्वतंत्र्यांश 44 पर सार्थकता मान 0.961 है। यह मान 0.01 से अधिक है। इसलिए साथर्कता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों का वितरण प्रसामान्य वितरण से सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता की अवधारणा संतुष्ट होती है।

तालिका क्रमांक-10: आवासीय पृष्ठभूमि के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसरणों की समजातीयता का परीक्षण

वैज्ञानिक अभिवृत्ति फलांक	माध्य आधारित	लीवेन सांख्यिकी	स्वतंत्र्यांश 1	स्वतंत्र्यांश 2	सार्थकता
		6.493	1	96	0.012

तालिका क्रमांक-10 के अवलोकन से भी स्पष्ट होता है कि, ग्रामीण तथा शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों के लीवेन परीक्षण का सांख्यिकीय मान 6.493 है। जिसका स्वतंत्र्यांश (1, 96) पर सार्थकता मान 0.012 है। यह मान 0.01 से अधिक है। इसलिए साथर्कता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *ग्रामीण तथा शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों के प्रसरण सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि ग्रामीण तथा शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसरण की समजातीयता की अवधारणा संतुष्ट होती है।

चूंकि आवासीय पृष्ठभूमि के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता तथा प्रसरणों की समजातीयता की अवधारणा संतुष्ट होती है, अत: t-परीक्षण के प्रसरण समजातीय निर्गमन को व्यवहार में लाकर परिणामों की विवेचना की गई है।

तालिका क्रमांक-11: आवासीय पृष्ठभूमि के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों का t-परीक्षण

समूह	N	माध्य	मानक विचलन	स्वतंत्र्यांश	t	द्विपुच्छीय सार्थकता मान	टिप्पणी
ग्रामीण	54	48.41	7.34	96	0.466	0.642	सार्थक नहीं।
शहरी	44	47.80	5.19				

उपरोक्त तालिका क्रमांक-11 के अवलोकन से स्पष्ट होता है कि माध्यमिक स्तर के कक्षा नौ के ग्रामीण तथा शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करने पर प्राप्त हुआ कि ग्रामीण विद्यार्थियों के वैज्ञानिक अभिवृत्ति का माध्य फलांक 48.41 तथा मानक विचलन 7.34 है। इसी प्रकार शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति का माध्य फलांक 47.80 तथा मानक विचलन 5.19 है। ग्रामीण तथा शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति माध्य फलांकों का परिकलित t-परीक्षण का मान 0.466 है, जिसका स्वतंत्र्यांश 96 पर सार्थकता मान 0.642 है। यह मान 0.05 से अधिक है। इसलिए साथर्कता के 0.05 स्तर पर सार्थक नहीं है। अतः शून्य परिकल्पना, *माध्यमिक स्तर के कक्षा नौ के*

ग्रामीण तथा शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति के माध्य फलांकों में सार्थक अंतर नहीं है, निरस्त नहीं की जा सकती। परिणामस्वरूप कहा जा सकता है कि माध्यमिक स्तर के कक्षा नौ के ग्रामीण तथा शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति के माध्य फलांको में सार्थक अंतर नहीं है। परिणाम से यह स्पष्ट होता ही कि माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति पर उनकी आवासीय पृष्ठभूमि का सार्थक प्रभाव नहीं पड़ता है। रेवती तथा मीरा (2017) ने केरल राज्य के कोयट्टम जिले के माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति का अध्ययन किया। इनके शोध का एक प्रमुख उद्देश्य आवासीय पृष्ठभूमि के आधार पर विद्यार्थियों की वैज्ञानिक अभिवृत्ति की तुलना करना था। अपने शोध परिणामों में इन्होंने पाया कि ग्रामीण तथा शहरी विद्यार्थियों की वैज्ञानिक अभिवृत्ति में सार्थक अंतर नहीं है। मुरुगन (2019) ने प्राथमिक स्तर पर शिक्षा प्रदान करने वाले ग्रामीण तथा शहरी शिक्षकों की वैज्ञानिक अभिवृत्ति की तुलना करने पर पाया कि शिक्षकों की वैज्ञानिक अभिवृत्ति पर उनकी आवासीय पृष्ठभूमि का कोई सार्थक प्रभाव नहीं पड़ता है।

4. शोध कार्य के चौथे उद्देश्य माध्यमिक स्तर पर कक्षा नौ के सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों की वैज्ञानिक अभिवृत्ति के माध्य फलांकों की तुलना करने के लिए विद्यार्थियों से प्राप्त आंकड़ों को सामाजिक श्रेणी के आधार पर व्यवस्थित कर सर्वप्रथम प्राप्तांकों की प्रसामान्यता तथा प्रसरणों की समरूपता की अवधारणाओं की जाँच की गई। प्रसामान्यता तथा प्रसरणों की समजातीयता की अवधारणाओं के संतुष्ट हो जाने के बाद एक-मार्गीय प्रसरण विश्लेषण (One Way ANOVA) सांख्यिकीय प्रविधि की सहायता से आंकड़ों का विश्लेषण किया गया। प्राप्तांकों की प्रसामान्यता, प्रसरणों की समजातीयता की अवधारणाओं की जाँच तथा एक-मार्गीय प्रसरण विश्लेषण (One Way ANOVA) के सांख्यिकीय परिणामों का विवरण निम्नलिखित तालिकाओं में प्रस्तुत किया गया है-

तालिका क्रमांक-12: सामाजिक श्रेणी के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता का परीक्षण

वैज्ञानिक अभिवृत्ति फलांक	सामाजिक श्रेणी	कोल्मोगोरोव-स्मिरनोव			शापिरो-विल्क		
		सांख्यिकी	स्वतंत्र्यांश	सार्थकता	सांख्यिकी	स्वतंत्र्यांश	सार्थकता
	सामान्य वर्ग	0.120	26	0.200	0.963	26	0.457
	अन्य पिछड़ा वर्ग	0.107	48	0.200	0.969	48	0.237
	अनुसूचित जाति	0.184	24	0.036	0.965	24	0.551

तालिका क्रमांक-12 के अवलोकन से स्पष्ट होता है कि, सामान्य वर्ग के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों के शापिरो-विल्क परीक्षण (N<50) का सांख्यिकीय मान 0.963 है। जिसका स्वतंत्र्यांश 26 पर सार्थकता मान 0.457 है। यह मान 0.01 से अधिक है। इसलिए सार्थकता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *सामान्य वर्ग के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों का वितरण प्रसामान्य वितरण से सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि सामान्य वर्ग के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता की अवधारणा संतुष्ट होती है।

तालिका क्रमांक-12 के अवलोकन से स्पष्ट होता है कि, अन्य पिछड़ा वर्ग के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों के शापिरो-विल्क परीक्षण (N<50) का सांख्यिकीय मान 0.969 है। जिसका स्वतंत्र्यांश 48 पर सार्थकता मान 0.237 है। यह मान 0.01 से अधिक है। इसलिए सार्थकता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *अन्य पिछड़ा वर्ग के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों का वितरण प्रसामान्य वितरण से सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि अन्य पिछड़ा वर्ग के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता की अवधारणा संतुष्ट होती है।

तालिका क्रमांक-12 के अवलोकन से यह भी स्पष्ट होता है कि, अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों के शापिरो-विल्क परीक्षण (N<50) का सांख्यिकीय मान 0.965 है। जिसका स्वतंत्र्यांश 24 पर सार्थकता मान 0.551 है। यह मान 0.01 से अधिक है। इसलिए सार्थकता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों का वितरण प्रसामान्य वितरण से सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता की अवधारणा संतुष्ट होती है।

तालिका क्रमांक-13: सामाजिक श्रेणी के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसरणों की समजातीयता का परीक्षण

वैज्ञानिक अभिवृत्ति फलांक	माध्य आधारित	लीवेन सांख्यिकी	स्वतंत्र्यांश 1	स्वतंत्र्यांश 2	सार्थकता
		0.989	2	95	0.376

तालिका क्रमांक-13 के अवलोकन से यह स्पष्ट होता है कि सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों के लीवेन परीक्षण का सांख्यिकीय मान 0.989 है। जिसका स्वतंत्र्यांश (2, 95) पर सार्थकता मान 0.376 है। यह मान

0.01 से अधिक है। इसलिए साथर्कता के 0.01 स्तर पर सार्थक नहीं है। इस परिप्रेक्ष्य में शून्य परिकल्पना, *सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों के प्रसरण सार्थक रूप से भिन्न नहीं हैं, निरस्त नहीं की जा सकती*। फलस्वरूप कहा जा सकता है कि सामान्य, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसरण की समजातीयता की अवधारणा संतुष्ट होती है।

चूंकि सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों की प्रसामान्यता तथा प्रसरणों की समजातीयता की अवधारणा संतुष्ट होती है, अत: एक-मार्गीय प्रसरण विश्लेषण (One Way ANOVA) को व्यवहार में लाकर परिणामों की विवेचना की गई है।

तालिका क्रमांक-14: सामाजिक श्रेणी के आधार पर विद्यार्थियों के वैज्ञानिक अभिवृत्ति फलांकों का एक-मार्गीय प्रसरण विश्लेषण

स्रोत	वर्गों का योग	स्वतंत्र्यांश	माध्य वर्ग योग	F	सार्थकता मान	टिप्पणी
बाह्य (समूहों के मध्य)	211.372	2	105.686	2.635	0.077	सार्थक नहीं।
आंतरिक (समूहों के अंदर)	3809.904	95	40.104			
कुल	4021.276	97				

तालिका क्रमांक-14 के अवलोकन से स्पष्ट होता है कि सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति के माध्य फलांकों के F परीक्षण का परिकलित निरपेक्ष मान 2.635 है, जिसका स्वतंत्र्यांश (2, 95) पर सार्थकता मान 0.077 है। यह मान 0.05 से अधिक है। इसलिए साथर्कता के 0.05 स्तर पर सार्थक नहीं है। अतः शून्य परिकल्पना, *माध्यमिक स्तर के कक्षा नौ के सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति के माध्य फलांकों में सार्थक अंतर नहीं है, निरस्त नहीं की जा सकती*। परिणामस्वरूप कहा जा सकता है कि माध्यमिक स्तर के कक्षा नौ के सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति के माध्य फलांको में सार्थक अंतर नहीं है। परिणामस्वरूप यह स्पष्ट होता है कि माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति पर उनकी सामाजिक श्रेणी का कोई सार्थक प्रभाव नहीं पड़ता है।

शोध निष्कर्ष

प्रस्तुत शोध कार्य के प्रमुख निष्कर्ष निम्नलिखित हैं-

1. माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति के स्तर का वैज्ञानिक अभिवृत्ति मापनी के द्वारा एकत्रित आंकड़ों के विश्लेषण के पश्चात निष्कर्ष के रूप में यह प्राप्त हुआ कि माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति का स्तर मध्य है।
2. लिंग के आधार पर माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति की तुलना करने पर पाया गया कि बालकों के वैज्ञानिक अभिवृत्ति का माध्य फलांक, बालिकाओं के वैज्ञानिक अभिवृत्ति के माध्य फलांक से अधिक है। इस प्रकार कहा जा सकता है कि माध्यमिक स्तर के कक्षा नौ के बालकों की वैज्ञानिक अभिवृत्ति बालिकाओं की वैज्ञानिक अभिवृत्ति की तुलना में सार्थक रूप से अधिक है एवं इस पर लिंग का न्यून प्रभाव पड़ता है।
3. आवासीय पृष्ठभूमि आधार पर माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति की तुलना करने पर पाया गया कि कक्षा नौ के ग्रामीण तथा शहरी विद्यार्थियों के वैज्ञानिक अभिवृत्ति के माध्य फलांको में सार्थक अंतर नहीं है। परिणाम से यह स्पष्ट होता ही कि माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति पर उनकी आवासीय पृष्ठभूमि का कोई सार्थक प्रभाव नहीं पड़ता है।
4. सामाजिक श्रेणी के आधार पर माध्यमिक स्तर पर कक्षा नौ के विद्यार्थियों की वैज्ञानिक अभिवृत्ति की तुलना करने पर पाया गया कि कक्षा नौ के सामान्य वर्ग, अन्य पिछड़ा वर्ग तथा अनुसूचित जाति के विद्यार्थियों के वैज्ञानिक अभिवृत्ति के माध्य फलांको में सार्थक अंतर नहीं है। परिणाम से यह स्पष्ट होता है कि माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति पर उनकी सामाजिक श्रेणी का कोई सार्थक प्रभाव नहीं पड़ता है।

शैक्षिक निहितार्थ

प्रस्तुत शोध कार्य के शैक्षिक निहितार्थ निम्नलिखित हैं-

विज्ञान पाठ्यचर्या तथा शैक्षिक नीतियों के निर्माण में

विद्यार्थियों की विज्ञान विषय की शैक्षिक उपलब्धि पर उनकी वैज्ञानिक अभिवृत्ति का विशेष प्रभाव पड़ता है। इस अध्ययन के परिणाम माध्यमिक स्तर पर कार्यरत शिक्षकों तथा इस स्तर के लिए विज्ञान पाठ्यचर्या के विकास एवं शैक्षिक नीतियों के निर्माताओ के लिए एक आधार प्रदान करेगा। जिसकी सहायता से वे विज्ञान की पाठ्यचर्या का विकास करते समय पाठ्यचर्या में वैज्ञानिक अभिवृत्ति को बढ़ाने में सहायक होगी। अत: जिससे विद्यार्थियों कि शैक्षिक उपलब्धि को बढ़ाया जा सके।

कक्षागत अधिगम प्रक्रिया में

प्रस्तुत शोध के परिणाम बताते हैं कि बालिकाओं की वैज्ञानिक अभिवृत्ति, बालकों की तुलना में सार्थक रूप से कम है अत: शिक्षकों को इस शोध कार्य के परिणामों को ध्यान में रखते हुए अपना शिक्षण कार्य इस प्रकार करना चाहिए ताकि बालिकाओं की वैज्ञानिक अभिवृत्ति को भी बालकों के समान किया जा सके। इसके अतिरिक्त विज्ञान शिक्षा का एक महत्वपूर्ण उद्देश्य विद्यार्थियों में वैज्ञानिक अभिवृत्ति को विकसित करना होता है। यह शोध कार्य शिक्षकों को अपनी कक्षा के विद्यार्थियों की वैज्ञानिक अभिवृत्ति मापन के लिए आधार प्रस्तुत करेगा जिसकी सहायता से शिक्षक विद्यार्थियों में वैज्ञानिक अभिवृत्ति के स्तर का मापन कर उसको उच्च करने की दिशा में आगे बढ़ सकें। जिसके परिणामस्वरूप बालक अपने दैनिक जीवन की घटनाओं का अवलोकन वैज्ञानिक दृष्टिकोण से कर सकें। साथ ही कक्षागत शिक्षण-अधिगम प्रक्रिया को और अधिक वैज्ञानिक बनाने में प्रयुक्त वैज्ञानिक शिक्षण-अधिगम युक्तियों, शिक्षण-अधिगम व्यूह रचनाओं तथा शिक्षण-अधिगम उपागमों के चयन में भी शिक्षकों की सहायता करेगा।

अधिगम के आकलन में

वर्तमान समय में विज्ञान की कक्षा में विद्यार्थियों की प्रगति की जाँच के लिए परंपरागत प्रविधियों की जगह निर्माणवादी आकलन प्रविधियों का उपयोग किया जाता है। विज्ञान की निर्माणवादी आकलन प्रविधियों के चयन में विद्यार्थियों की वैज्ञानिक अभिवृत्ति एक महत्वपूर्ण भूमिका निभाती है। इन नवाचारी आकलन प्रविधियों में प्रयोग, संप्रत्यय से सम्बंधित क्रियाकलाप, पोर्टफोलियो तथा रुब्रिक आदि का शिक्षण-अधिगम प्रक्रिया के साथ ही समावेशन करते हुए विद्यार्थियों की अधिगम प्रगति की जाँच की जाती है। ये आकलन प्रविधियाँ विद्यार्थियों की अधिगम प्रगति की जाँच के साथ-साथ शिक्षक को भी अपने स्वयं के शिक्षण आकलन में सहायक होती हैं। जिससे वह अपनी कक्षा की शिक्षण-अधिगम प्रक्रिया में आवश्यकता अनुकूल परिवर्तन कर सकें। प्रस्तुत शोध कार्य विज्ञान शिक्षकों को बालकों की वैज्ञानिक अभिवृत्ति के स्तर से परिचित करवाएगा। जिससे शिक्षक अपनी कक्षा के विद्यार्थियों की वैज्ञानिक अभिवृत्ति को जानकार उनके विज्ञान विषय के आकलन के लिए उपयुक्त नवाचारी आकलन प्रविधि का चयन कर सके।

शिक्षकों के क्षमता संवर्धन में

वर्तमान शिक्षा पद्धति में शिक्षक का दायित्व मात्र शिक्षा देना ही नहीं होता अपितु बालक के सर्वांगींण विकास में सहायता देना भी होता है। शिक्षा का एक स्तर पूरा कर लेने के बाद विद्यार्थियों को आगे की कक्षाओं के लिए विषय चयन जैसी गंभीर समस्या का सामना करना पड़ता है। प्रस्तुत अध्ययन के निष्कर्ष विद्यालयों में विद्यार्थियों को उच्च माध्यमिक स्तर पर विषय चयन में उनकी तथा शिक्षकों की सहायता करने संबंधी उनकी क्षमताओं के संवर्धन में मार्ग प्रशस्त करेगा।

अन्य शोधकर्त्ताओं के लिए

यह शोध कार्य उन शोधार्थियों के लिए एक आधार प्रदान करेगा जो माध्यमिक स्तर के विद्यार्थियों की वैज्ञानिक अभिवृत्ति तथा उनकी शैक्षिक उपलब्धि के मध्य सहसंबंध का अध्ययन करना चाहते हैं।

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Role of Information and Communication Technology towards the Evolution of Digital India

Abstract

In this digital era, Information and Communication Technology (ICT) plays a vital role in our day to day life. It refers to that form of technology, which are used to communicate, store, generate, share, exchange valuable knowledge and skills around computing and communications devices. It helps peoples to access service/information regardless of geographical distance through Internet. It also acts a driver of economic development and social progress. ICT revolution globally is measured as with the help of Networked Readiness Index (NRI), which reflect the growing importance of technology and innovation across the world. As per the World Economic Forum, out of 139 economies where NRI was measured, Singapore ranks first and India holds 91st rank. According to World Economic forum "Political and regulatory environment, Business and innovation environment, Infrastructure, Affordability, Skills, Individual usage, Business usage, Government usage, Economic impacts, Social impacts" are the sub-index of ICT. If these sub-indexes are strong, ICT become very effective which in turn will be reflected in the economy. Majority of Indian people relay on government welfare payments such as the National Rural Employment Guarantee Act, widow pensions, old age pensions, scholarships, discounted LPG cooking gas, and other subsidies. Digital payment is being encouraged as part of digitization initiatives of the Government. Electronic Payment Framework was laid down and is followed by all Ministries/ Departments and their attached Institutions/PSUs and is applicable on all Central Sector (CS)/ Centrally Sponsored Schemes (CSS) and for all schemes where components of cash is transferred to individual beneficiaries. Hence, the current paper focuses on the Role of ICTs in socioeconomic development for which secondary data and reports are used from World Economic Forum, Measuring the Information Society Report 2017 - Volume 2, MSME report, ICT indicators database etc., with simple charts and tables the role of ICT in the development process of the economy is discussed and based on the result, policy suggestions are provided.

Keywords: *Growth, Information and Communication Technology, Indian Economy, Internet, Networked Readiness Index.*

Introduction

In this digital era, it is difficult to think of any event in our daily life without Information and Communication Technology (ICT).UNESCO has defined ICT as "forms of technology that are used to transmit, process, store, create, display, share or exchange information by electronic means. It includes not only traditional technologies like radio and television, but also modern ones like cellular phones, computer and network, hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as video conferencing". ICT is a new weapon of Teaching-Learning. A Corporate Information System (CIS) is a fully integrated, company-wide system solution that aims to meet the organizational ICT requirements at all levels.

It also acts a driver of economic development and social progress. ICT revolution globally is measured as Networked Readiness Index (NRI), which reflects the growing importance of technology and innovation across the world. As per the World Economic Forum out of 139 economies where NRI was measured, Singapore ranks first and India holds 91st rank. According to World Economic forum "Political and regulatory environment, Business and innovation environment, Infrastructure, Affordability, Skills, Individual usage, Business usage, Government usage, Economic impacts, Social impacts" are the sub-index of ICT(World Economic Forum,2016). If these sub-index are strong ICT become very effective which in turn will be reflected in the economy.

	Rank (out of 139)	Value (1–7)
Networked Readiness Index	**91**	**3.8**
Networked Readiness Index 2015 (out of 143)	89	3.7
Networked Readiness Index 2014 (out of 148)	83	3.8
Networked Readiness Index 2013 (out of 144)	68	3.9
A. Environment subindex	**99**	**3.7**
1st pillar: Political and regulatory environment	78	3.7
2nd pillar: Business and innovation environment	110	3.7
B. Readiness subindex	**88**	**4.4**
3rd pillar: Infrastructure	114	2.6
4th pillar: Affordability	8	6.6
5th pillar: Skills	101	4.1
C. Usage subindex	**103**	**3.3**
6th pillar: Individual usage	120	2.1
7th pillar: Business usage	75	3.6
8th pillar: Government usage	59	4.1
D. Impact subindex	**73**	**3.6**
9th pillar: Economic impacts	80	3.1
10th pillar: Social impacts	69	4.1

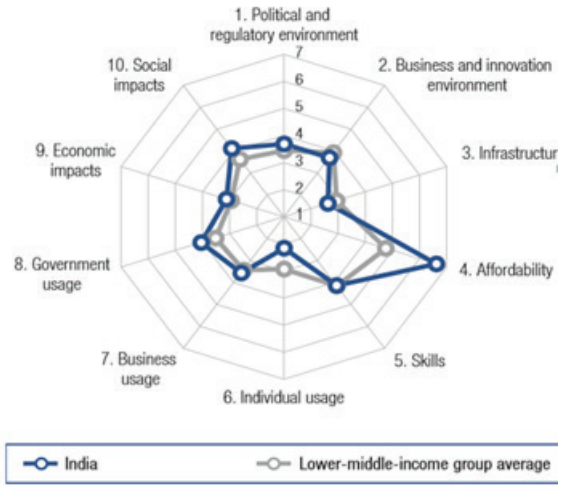


Figure 1: Network Readiness Index-India

Source: Global Information Technology Report 2016

Uses of ICT's are Many

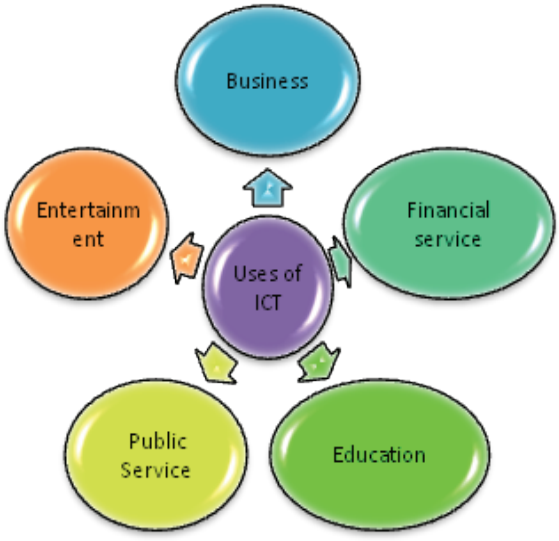


Figure 2: Uses of ICT

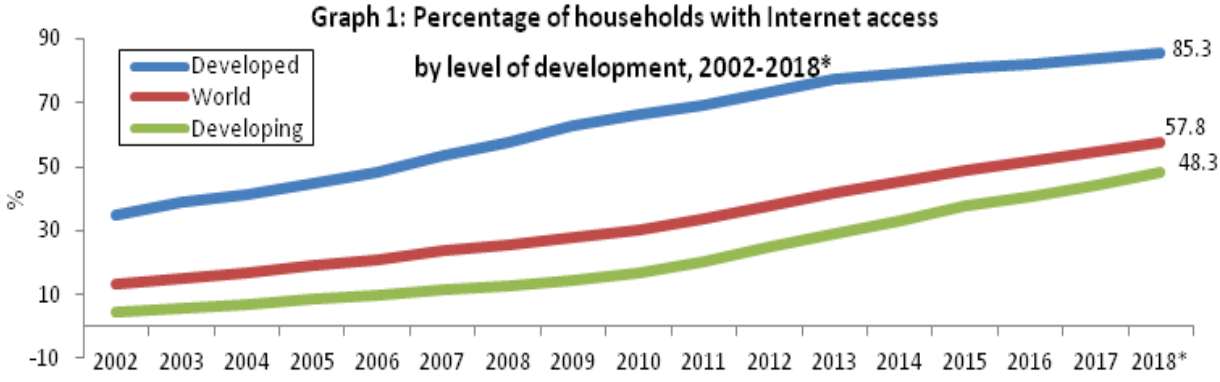
(i) In business (all business activity can be done from one place): It accelerates advertising, customer visit, product browsing, shopping, tax, receipt and process order, e-commerce

(ii) In Financial Services: Online services like transferring money, Capital market transactions, financial analysis etc

(iii) Entertainment: Movies, games, books, and social networking

(iv) In public service: Government services are available online, e-governance, widow pensions, old age pensions, scholarships, discounted LPG cooking gas, and other subsidies.

(v) In Education: Educational classes regardless of geographical distance through Internet, NPTEL, CEC, SWAYAM, UGC_MOOC's, UGC-INFLIBNET, Amrita e-learning etc



Source: ITU World Telecommunication/ICT Indicators database

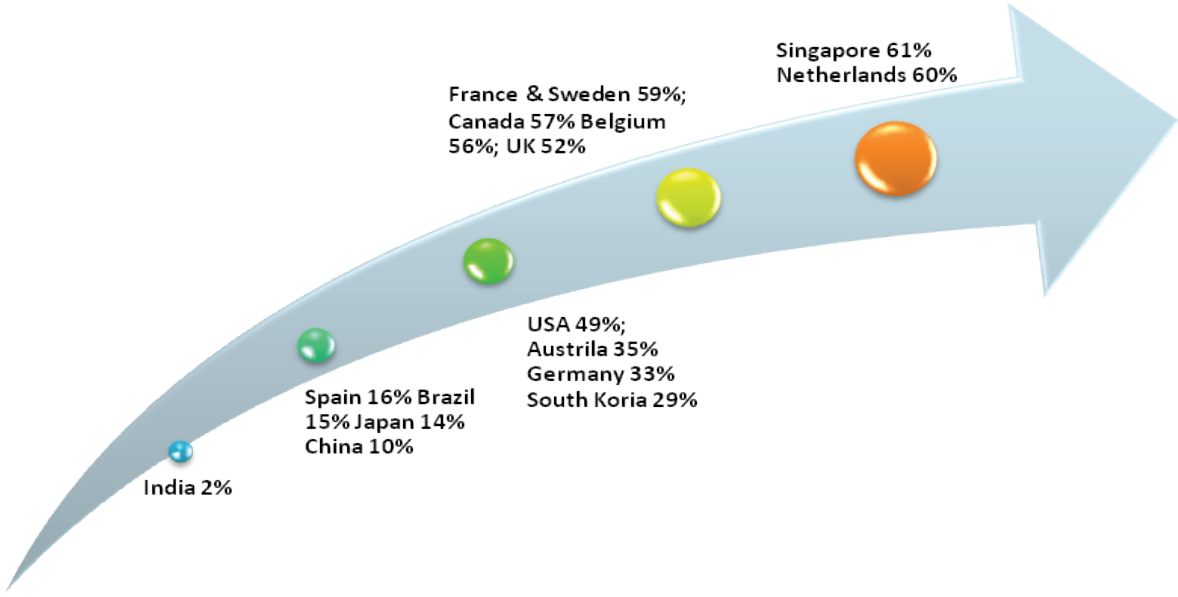
Percentage of households with Internet access by level of development, 2002-2018 for the world, Developed Economy and Developing Economy is presented in graph 1, which clearly reveals that the percentage usage of internet is high in Developed economy when compared to Developing Economy since 2001.

Majority of Indians relay on government welfare payments such as the National Rural Employment Guarantee Act, widow pensions, old age pensions, scholarships, discounted LPG cooking gas, and other subsidies. The Government of India makes these payments, with the estimated value being a huge $60 billion per year, through Direct Benefit Transfer (DBT).[1] Electronic payments bring substantial benefits. This Digital evaluation yields several implications for both public and private sector as they explore ways to develop the state of the cashless economy. Digital payment is being encouraged as part of digitization initiatives of the Government. India's digital payment systems began around 2010. India still ranks low (just 2 percent) among other countries (graph 2) in terms of percentage of cashless transactions, India is a country where 98 per cent of the total economic transactions by volume are carried out by cash, and for countries like Singapore and Netherlands about 61 percent of the transactions takes place through E-payment. Electronic Payment Framework was laid down and is followed by all Ministries/ Departments and their attached Institutions/PSUs and is applicable on all Central Sector (CS)/ Centrally Sponsored Schemes (CSS) and for all schemes where components of cash is transferred to individual beneficiaries. On the other hand the safety and security of

1 Direct Benefit Transfer is a major reform initiative launched by Government of India on 1st January, 2013 to re-engineer the existing cumbersome delivery processes using modern Information and Communication Technology (ICT). http://cabsec.nic.in/dbt/origin.html

the cashless transactions must be ensured, Training program must be given to people (urban and rural) regarding the, fraud activities, security measures, redressal programs and grievance mechanism. Social media can play a vital role to start with this type of awareness program.

Graph 2: Cashless nations and their corresponding percentage of cashless transactions



Source: Master Card Advisor's Measuring progress toward a cashless transaction

Hence, the current paper explores the Role of ICTs in socioeconomic development for which secondary data and reports are used from World Economic Forum, Measuring the Information Society Report 2017 - Volume 2, MSME report, ICT indicators database etc., Simple charts and tables are used to discuss the role of ICT in the development process of the economy

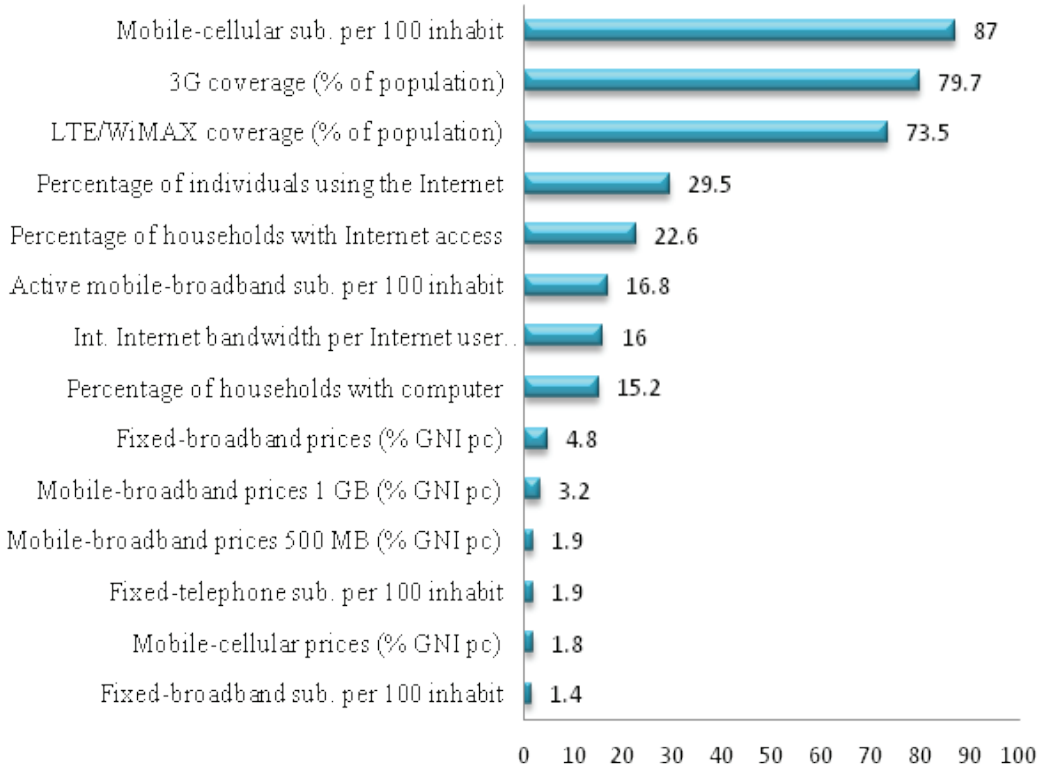
Table 1: Key indicators of ICT (2016)

Key ICT indicators	World	India
Fixed-telephone sub. per 100 inhabit	13.6	1.9
Mobile-cellular sub. per 100 inhabit	101.5	87
Fixed-broadband sub. per 100 inhabit	12.4	1.4
Active mobile-broadband sub. per 100 inhabit	522	16.8
3G coverage (% of population)	85.0	79.7
LTE/WiMAX coverage (% of population)	66.5	73.5
Mobile-cellular prices (% GNI pc)	5.2	1.8
Fixed-broadband prices (% GNI pc)	13.9	4.8
Mobile-broadband prices 500 MB (% GNI pc)	3.7	1.9
Mobile-broadband prices 1 GB (% GNI pc)	6.8	3.2
Percentage of households with computer	46.6	15.2
Percentage of households with Internet access	51.5	22.6
Percentage of individuals using the Internet	45.9	29.5
Int. Internet bandwidth per Internet user (kbit/s)	74	16

Source: Measuring the Information Society Report 2017 - Volume 2

The Key indicators of ICT from Table 1 clearly compares the ICT indicator with world, this reveals that in spite of India being the second largest populated country the technological development has yet not reach all parts of India (graph 3). So the need of technological development can be perceived through this table.

Graph 3: ICT indicator of India



Source: Computed from Information Society Report 2017

In spite of ICT being an independent learning platform for students, interesting classroom activities, enhance the quality and efficiency of education (images and videos), improve the digital culture in schools, colleges, and universities. There can be disadvantages like misguiding information, risk of cyber attacks and hacks, managing online courses can become problematic at times, it can be impossible to access everywhere, misuse of technology and most importantly teachers require experience to handle ICT.

Conclusion

Digital technologies can change innovation in a qualitative way. Internet continues to serve as a driver of innovation, economic growth, and social development. The quality of government and its online service is measured by ICT. "Clear identification of educational aims and principles are the basis for ICT program design, is essential for meaningful integration,(Gurumurthy, 2018)".The direct way in which digital technology affects innovation is an existing tools, products, processes, and business models by embedding new technologies. Despite of improvements in India's political, regulatory environment and in its business and innovation environment, India is in the overall rank of 91, the drop can be due to lack of infrastructure and low levels of skills to ICT adoption. A portion of Indian population is still illiterate and a similar share of youth is not enrolled in secondary education. Only 15 out of 100 households have access to the Internet and mobile broadband remains a privilege of the few, with only 5.5 subscriptions for every 100 people (table 1). Micro[2] enterprises constitute an important pillar of Indian economy as they account for more than 90% of total number of enterprises,

2 Manufacture enterprises, Service enterprises

Its performance in terms of providing online services and allowing e-participation is very low, to support entrepreneurship and innovation. The reason can be that cost of ICT tools can be expensive and lack of stable electricity, internet or low bandwidth. In 2015 the government launched the Digital India program, which aims to close this gap by raising investment in digital infrastructure, improving digital literacy, and increasingly providing online services to citizens. In spite of India being the second largest populated country the technological developments has yet not reached all parts of the country. When compared to other countries which are moving ahead at higher speeds, India has to reformat its structure and also take care of the security (Cyber Crime) due to the growth of Internet (ICT).

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