

Voices of Teachers and Teacher Educators



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About the Journal

Voices of Teachers and Teacher Educators (VTTE), an initiative of the Ministry of Education, erstwhile Ministry of Human Resource Development (MHRD), is a peer-reviewed e-journal coordinated by the NCERT. The journal is published biannually and is bilingual (Hindi and English).

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, National Curriculum Framework for Teacher Education (NCFTE)-2009, Right of Children to Free and Compulsory Education Act (RTE)-2009, and National Education Policy (NEP)-2020—all reflect this commitment, underline the principles that make such an effort necessary, as well as spell out the strategies for it. In this regard, we are faced with challenges that include augmenting the role of teachers in shaping the social transformation that India is witnessing, making education equitable, and effecting a long-lasting impact on the quality of education. Teachers and everyone 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 students, teachers, teacher educators, researchers, administrators, and policymakers 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., as well as other stakeholders. The journal aims to facilitate the dissemination of their ideas and make their engagement visible in accomplishing the extraordinarily complex and diverse tasks that they are expected to perform.

Contributions to the journal are welcome in both English and Hindi. Voices is published online, and we hope to circulate it widely. The journal seeks to provide a platform and build a network for our voices, ideas, and reflections; it carries articles, research papers, critical reviews, and book reviews and covers several themes in school and teacher education, including best practices, innovations, experiments, and action research.

We look forward to suggestions and comments of our readers on the articles published.

The views expressed and the information given in this journal are those 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 policymakers. 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, and 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 receiving your contributions for the forthcoming issue. We also look forward to your comments and suggestions. The contributions may be sent to the following: E-mail: voicesofeducators2016@gmail.com

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Guidelines for Authors

'Voices of Teachers and Teacher Educators' largely gives space to contributions spanning experiences, questions, suggestions, and perspectives, as well as critical comments on various aspects of Teacher Education and Schooling. Ideas developed in the text must be clear and coherent; the argumentation must be convincing. The paper must be clear and bring out the points examined in the text so that the reader can have a clear idea of the author's(s') perspective. The language of the text should not be full of jargon or with gymnastics of technical words. It should be purposeful, relevant, and understandable for the audience of the journal.

The length of an article is expected to be around 5000 words; in extreme cases, it should not exceed 7000 words. While there is no lower limit, the contribution must not be an exposition of a point of view or an uncritical / hypercritical presentation of an experience. Preferably, the papers should be approximately 3000 words. The manuscript must include a title, author details, abstract, keywords, well-defined sections and subsections (as applicable for the manuscript type), and proper referencing.

As per the policy for inclusion of articles in Voices of Teachers and Teachers Educators, no contribution with a similarity index higher than 4 to 5% on Urkund would be taken for review. The author(s) must ensure that the paper that they submit has less than a 4 to 5% similarity index on Urkund. There are online mechanisms to check for the similarity index; authors are encouraged to check the same before submitting the manuscript. For those who are citing other authors' work or their own work, please ensure that there are not many quotes from any previously published text. You may not take any material from any published work, including your own. You must keep the amount of material you cite to the minimum and provide reference to the original. The contents of your paper should be your interpretation of the cited work, in your words. You must give credit for the work that you refer to and can, if central to your paper, make its essence available, but not through the use of text from the work as it is. We would also urge you to do the Urkund test at your end if possible and attach the report so that the process of review is quicker.

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Editorial

This is the December 2024 issue of the Voices of Teachers and Teacher Educators. This issue carries 19 articles before we describe these articles there are some general points that may be of interest to the readers as well as the authors. There have been rigorous efforts in the last 10 years in fact in the last 40 years to improve classrooms and learning in elementary schools as well as at the foundational school before students enter primary schools. Many of these efforts have been serious and have sustained over a long duration. We have teacher preparation pre service and in-service LS as well as enrichment interactions with teachers as a part of their in-service continued development. Leading research organizations as well as universities and many other institutions have been who attempting to work with the public education system in order to make its functioning mode equal and just so that more children get the quality education that they all deserve as citizens of independent India. It would be expected that in the light of these efforts and the consequent reflection on the work that is happening there would be studies and papers that would address the key concerns that that lie before us as we attempt to respond to the recommendations and expectations of the national education policies and the curriculum frameworks that have emerged from them.

We receive many submissions for publication in what is his of teachers and teacher educators. In fact so large the number is that we often get swamped and the process of reviewing providing feedback and taking decisions sometimes gets delayed for months. However what is disappointing is that most of these papers do not have much substance issues that with respect to the confront education of children whether in one classroom, school or a larger system. It does not seem that the authors are trying to address learning a question about all the learning process but our only concerned about writing something that would pass muster as a work of research. Very often the paper is just a collection of some data collected from convenient sample without a serious research question using and tools that are not even well constructed or piloted. We think it is time we went past the notion that using statistics and the mumbo jumbo of t-test, Annova, etc makes for an adequate content for a research paper. The point is to have something worth investigating along with the theoretical foundations, previous work, and relevance to the contemporary situation of classrooms, student or teacher learning, attitude or understanding about them. We all know that the readers of Voices of Teachers and Teacher Educators would like to read the reflective attempts at intervening in the system and analysing the effort be there dispassionate and objective lens. Only such a process can help others benefit from the experience of our work and clearly it will also help improve the quality of our work. In fact others can learn from what we have done and the reflection that we have written about only when we learn something from it. It would be good to consider writing for Voices of Teachers and Teacher Educators something that you find interesting for yourself and something that you have learned from your efforts. We are sure that there are many sincere and rigorous efforts happening in the country and more people who are participating in this effort would take time to write about this difficulties and failures of their efforts along with these successes and the improvements.

In this issue there are four contributions that are around the area of universalisation, access and inclusion. The paper by Prakrati Bhargava*, Lucky Thakur, and Heena Sharma with the title **“Examining the Status of the Right to Education in Government Elementary Education in Himachal Pradesh”**, traces the journey of one of the Indian states towards

UEE through the massive mission mode efforts of the SSA. The paper spanning a interval of over 14 years studies the data for the elementary schools and one of its important conclusions is that Physical and Human resource plays a major role in ensuring quality education while addressing the goal of equity and access.

The paper, **“Equitable and Inclusive Education through Continuous Professional Development of Teachers”** by Adrishta Sharma* and Angadi, G.R, explores the influence of Continuous Professional Development (CPD) on the quality of in-service teacher education while adopting equitable and inclusive educational practices through. Through a critical desk study analysis of 28 Indian studies, the research synthesizes five core themes and suggests actionable strategies for policymakers and educators for a diverse student population.

The third paper in this stream, **“Household Factors and Gendered Education Gaps in Rural Kashmir”** authored by Zakir Hussain Gadda* and Mohmad Saleem Jahangir, is a study to explore the role of factors in school dropouts (from grade 1 to 10) amongst Muslim girls. Study was done in the rural areas of Kulgam district in Jammu and Kashmir (J&K), revealed multifaceted and interrelated household factors for female school dropouts. While some of the factors are specific to Kashmir situation it does offer suggestions to policymakers and educationists to ensure equity in access to education

The fourth paper, **“Empowering Education in India: Rethinking Access to Equity and Inclusivity through the Samagra Shiksha Abhiyan”** by Md Asraul Hoque* and Krishnan Chalil critically examines the impact of Samagra Shiksha Yojna on promoting equitable learning opportunities. Considering both the successes and challenges it points out while the scheme has expanded access, persistent gaps in quality and inclusivity remain, due to resource allocation, teacher readiness, and community engagement

Five of the contributions are studies on teachers. The first one is the tracing of the journey of a teacher through an online Teacher professional development program. The paper with the title, **“Reflection on Vigyan Pratibha teacher”**, is written by Raziya Parakkal*, and Deepa Chari. The paper presents an example of a teacher who showed agency and led a community of teachers to understanding through the sharing of her experience and work.

Another paper that is the same stream is about **“Exploring Prospective Teachers’ Conceptions in Thermal Physics”**, authored by Namrata. The paper points out that it is not students who hold alternative concepts in science but a significant number of teachers held such basic concepts around thermal physics. They like students employ diverse arguments to justify their alternative answers. The study poses serious questions to the preparation and enrichment of teachers of science.

The third paper by Hemal Brahmabhatt* and Vinita Advani with the title, **“An Investigation into Teacher Trainees’ Attitude towards Personal Value”** is focused on the study of the trainee teachers’ attitudes towards the fundamental personal values dignity, truthfulness, fairness, and responsibility.

The fourth paper in this stream, **“Teachers’ Insights: Exploring In-Service Teacher Education in Select Districts of Punjab”**, by Bharati Garg* and Bhawna Gupta studies the perception of government middle school teachers from two districts of Punjab towards the quality and effectiveness of in-service training provided to them. It identifies the challenges faced by teachers and head teachers in implementation of trainings.

The fifth paper, **“Attitudes and Perceptions Towards Sustainable Development Among Prospective Teachers”** by Poonam Bharti* and Chhaya Soni is on how prospective teachers perceive Sustainable development and what is the attitude towards it. The study covers three important sustainability-related dimensions: social, economic, and environmental sustainability.

There are five papers that are broadly in the area of curriculum and pedagogy. These cover diverse aspects of this overarching field. The first paper in this broad theme is by Sankaranarayanan Paleeri* and Mohammed Shiyas MV and has the title **“Students as Contributors: Reflections on School Education Curriculum Construction Experiences”**. The paper examines the student participation in Kerala state school curriculum development procedures and reveals the potential abilities of students to creatively make suggestions towards constructing their own school education curriculum.

The next paper **“Green Schools: Integrating Sustainability in School Curriculum”** by Tisha Goswami* and Ansar Ahmad, is focused on finding out from a purposively selected sample of schools how dimensions of sustainability i.e. social, environment, cultural and economics are included in the curriculum. Study finds that the schools face challenges to incorporate ESD in the curriculum and had insufficient facilities to be considered as a green school.

The third paper in this category is by S. Prabu Shankar and it has the title, **“Digital Education Initiatives: A Guide to Transformative Pedagogical Practices”**. The paper focuses on the initiatives to a digitally empowered education in India. This paper explores the perspectives, policies and initiatives that aim at bringing in innovation in the digital applications of technology in the teaching-learning process.

The fourth paper, **“Post-Pandemic Learning: Insights from Indian College Students”** has been authored by Prakhar Srivastava*, Samina Bano and Shuby Abidi. The paper investigates the experiences of Indian college students related to online learning during Covid-19, using reflexive thematic analysis. The study captures both positive and negative experiences related to online learning

The next paper, **“Experiential Learning in Science in Odisha Government Schools: Perceptions and Practices”** by Pranab Kumar Ghose* and Laxmidhar Behera is focused on exploring the resources, perceptions, practices, and challenges in planning and implementation of EL (an educational approach that facilitates the understanding and application of scientific concepts by integrating theoretical knowledge with practical, hands-on experiences) in secondary science education in government schools in Mayurbhanj in Odisha, India with the use of a mixed-methods approach. The study finds that overreliance on rote memorization, limited interdisciplinary approaches, insufficient resources, time constraints and large class sizes hinder effective implementation and suggests increased infrastructure funding, specialized training and careful planning are essential.

There are four more papers in this issue one of which is entitled, **“Attention Deficit Hyperactivity Disorder (ADHD): Awareness, Attitudes, and Behavioural Responses among Aspiring Teachers in North East India”** by R. D. Padmavathy, is a study examines the awareness, attitudes, and behavioural responses towards ADHD among aspiring teachers of this region. The study finds that their understanding of this is average while they know about inattention, hyperactivity, and impulsivity; they struggle to clearly distinguish the specific characteristics of ADHD.

The second paper by Sindhu K.* and Ampili Aravind has the title, **“Emotional Social Intelligence and Gardner’s Interpersonal and Intrapersonal Intelligence: A Conceptual Analysis”**. The paper explores the relationship between Howard Gardner’s interpersonal and intrapersonal intelligence and the broader constructs of Emotional Social Intelligence (ESI) and points out that research indicates that socially oriented intelligence encompasses the capacity to assess social situations through the effective application of emotional intelligence.

The next paper by Abhay Kumar*, Deepty Gupta, Nidhi Singh, Monika Bhakuni, Vaishali, Komal Arora, Ruchi Khatri, Abhay Kumar Shukla, Kamlesh Kumar Yadav, and Amarendra Behera, with the title **“The Indian Educational TV: Outreach, Perceptions and Preferences”** is based on a dipstick survey to understand the role of educational television in improving access to educational opportunities in remote areas of India. The study found that more students as opposed to teachers found the programs beneficial.

The eighteenth paper entitled **“Social Audit of Samagra Shiksha: Experiences from the field”** by Sharad Sinha* and Prasoon Kumar, is based on the experience of preparing master trainers at the State level for social audit exercise of the schools. The paper describes the preparation done, the implementation of the plan and what are the lessons learnt. It also suggests what emerges as the way forward for the states including the recommendation for development of individual plans.

The nineteenth and the last paper of this issue by Isha Joshi has the title, **“Understanding Dynamics of School Discipline: Examining Classroom Practices and Teachers’ Perspectives in a Primary School”** focuses on the dynamics of school discipline practices within the context of one primary school in Delhi. Taking this as a case the paper explores school discipline practices and how a particular disciplinary idea becomes ingrained as the practiced norm. Using participant observation, informal interactions and interviews the paper studies the subtle but influential forces that shape individuals’ beliefs within a community and contribute to the construction of socially acceptable norms. The paper finds that categories of order, rules, obedience, respect and service have priority among teachers’ perceptions of discipline.

We hope you would find some of these papers interesting and relevant for your work and look forward to your comments on them. We also look forward to your research papers based on your experiences and research. Papers that are relevant and meaningful to the complex challenges that face the country in reaching quality education to all the children and that helps us interrogate the nature of quality education for the diverse set of children and circumstances in the country.

We would like to share that our focus area for the next few issues would be ‘multilingualism’. Multilingualism is now considered to be an important dimension in ensuring learning by children. It has become increasingly important in any attempt to improve the quality of learning. Experiences, reflections, and analysis of the issues are welcome for consideration in Voices of Teachers and Teacher Educators (VTTE). We may also point out that while for the next few issues, we would like to focus on this area and on why and how it is important in education, we would also carry other papers. So, please keep sending in the other papers that you write to us. Please read the guidelines about the kind of papers we carry and we hope you to enrich the quality of the journal through your experienced and analysed and rigorously documented papers apart from other studies and researches on children, curriculum, pedagogy and leaning.

Examining the Status of the Right to Education in Government Elementary Education in Himachal Pradesh

Prakrati Bhargava*, Lucky Thakur, Heena Sharma

Abstract

The Sarva Shiksha Abhiyan (SSA), launched in 2002, followed by the incorporation of the Right to Education (Act) under Article 21A in Part III of the Constitution of India in 2009, made free and compulsory education a fundamental right for all children aged 6–14 years. With this, India embarked on the journey of achieving education for all. Both the Central and state governments are responsible for ensuring the effective implementation of the Act. This study examines the changes experienced in the realm of elementary education in government schools of Himachal Pradesh from 2006 to 2016. A significant shift has been observed in government elementary education system across India, as the government has to ensure effective learning at this stage, besides ensuring the universalization of elementary education (UEE). For the purpose of analysis, the selected period is divided into two parts—before the enactment of the RTE Act 2009 (i.e., 2006 to 2009) and after its implementation (i.e., 2010 to 2016). The researcher has collected data for two broad indicators viz. human resource and physical infrastructure for the state of Himachal Pradesh. The data have been retrieved from the District Information System of Education (DISE) report published by the National Institute of Education Planning and Administration (NIEPA); the Elementary Education Department of the Government of Himachal Pradesh; the Ministry of Human Resource Development (MHRD), Government of India, and the Annual Status of Education Report (ASER) by Pratham, an NGO. Physical and human resource play a vital role in ensuring quality education, while addressing the goal of equity and access. Indian states have moved at their own pace in achieving the goal of UEE. Thus, it would be worth exploring the case of Himachal Pradesh for understanding the trajectory of its journey in achieving UEE.

Keywords: Elementary education, physical and human resources, Sarva Shiksha Abhiyan, Right to Education, Himachal Pradesh

Introduction

Modern concepts of education are said to be a ‘tri-polar process’, which involve three components, i.e., the teacher, the taught and the social environment (Hoque, 2020). These components help an individual learn, adjust and socialise in society. Reading, writing and arithmetic are integral parts at the preliminary stage, forming the basic foundation for higher-order cognitive processes. Primary education constitutes the most crucial stage, as it builds the foundation

for the overall learning process. On one hand, these skills determine the basic literacy level of citizens, while on the other, they serve as stepping stones for continuing education. Thus, for realising the full potential of its citizens, the state must ensure the provision of quality primary education.

In 1950, the Constitution placed education under the Directive Principles of State Policy, which entrusted the state with the responsibility to provide free and compulsory education to all children aged 6 to 14 years within a period of 10 years after India became

a republic (Govinda & Mathew, 2018). It is argued that the Policy, in the realm of primary education in India, has been derived from three types of instruments: the national five-year development plans, national policy and the Constitution (Dyer, 1999). Therefore, many constitutional amendments were made to strengthen elementary education in India. India took a bold step by effecting the 86th constitutional amendment in 2002. Furthermore, it made a phenomenal shift by enacting the RTE Act 2009; Section 3 confirmed citizens' legal protection by making free and mandatory elementary education a fundamental right for all citizens aged 6 to 14 years (Uma, 2013).

India's ratification of the RTE Act 2009 was considered a big leap for the state in ensuring the democratic rights of citizens by empowering them through education. Nonetheless, a decade has passed since the promulgation of this Act, yet there are serious concerns if it has succeeded in ensuring quality education for its citizens. The RTE Act specifies financial and programmatic responsibilities for implementation on central and state government (Government of India, 2009, Section 7). Furthermore, the Act has tried to strengthen teaching-learning process, as well as the physical infrastructure in government schools in India. The provision made in Section 25, followed by the Schedule, defines pupil-teacher ratio as 30:1 for Classes 1 to 5 and 35:1 for Classes 6 to 8 (Government of India, 2009, Section 25). With regard to infrastructure, Sections 19 and 20 of the RTE Act authorise the governments to frame regulatory mechanism for schools that do not comply with the basic infrastructure norms. Furthermore, a separate schedule has been added to the RTE Act to ensure minimum infrastructure facilities in schools, such as a playground, boundary wall, barrier-free access, separate restrooms for boys and girls, a kitchen for preparing mid-day meals is prepared for children, and a safe and sufficient drinking water supply for all children (Government of India, 2009). However, framing these

provisions do not guarantee that adequate facilities are available in government schools to attract children for admission, unlike private schools in India. Since social and material inequalities are deeply ingrained in India and other countries, it is impossible to ensure that the state will provide facilities for high-quality education by merely passing legislation. This is because responsibilities are not always assigned in just or consensual terms. The individualised and decontextualised accountability redirect shortcomings in the educational system to personal accountability issues or implementation flaws (Dyer, 2022).

To safeguard these rights, the RTE Act includes provisions like Section 31, empowering national and state commissions for the protection of child rights to enforce children's rights through adequate classroom space, facilities, and access to essentials like textbooks, uniforms, sports gear and mid-day meals, while also prohibiting discrimination and physical punishment. However, Section 22 exempts private and minority institutions from creating School Development Plans (SDPs), which affects educational uniformity even though it emphasises the need for ensuring children's rights, facilities, teacher availability, classroom quality, assessments, high-quality instruction and inclusive learning environments in government schools. The Central government designates the National Council for Teacher Education (NCTE) as the academic authority, with Section 23 of the Act detailing the requirements and service conditions for school instructors, who must regularly attend school, complete curriculum on time, provide extra help, assess student learning and engage with parents. Section 25 further mandates that the government and local authorities maintain a preserved student-teacher ratio, though this clashes with Section 19's three-year timeline for meeting quality standards, for which an amendment bill has been introduced.

Under Section 27 of the Act, teachers cannot be assigned non-academic duties, except

during tasks like the decennial census, disaster relief and elections. However, critics argue this section inadequately supports quality public education by allowing 'non-teaching work' to be assigned to government school teachers, while private school teachers are not expected to perform these duties. Private schools are also allowed to raise their fee freely, burdening low-income families, while public schools remain under-resourced (Bhuyan, 2013). The RTE Act also includes a 25% reservation in private schools for students from disadvantaged groups, yet only 6–7% of eligible children benefit, while most low-income students attend underfunded government schools. Sadgopal (2010) argues that this reservation and reimbursement scheme is a neo-liberal policy, diverting public funds to private, corporate and religious institutions, seemingly as school vouchers. He further says that due to the lack of fee regulation, low-income families bear additional costs for essentials like books and uniforms, while government schools continue to lack basic facilities, such as drinking water and toilets. The increasing diversity in classrooms can enrich language and experiential learning. Kumar (2012) notes classrooms that embrace diversity can improve the educational process for students. However, it is speculative to assume that diversity alone will support students from disadvantaged backgrounds, as students and teachers bring diverse attitudes, beliefs, habits and perspectives shaped by their social backgrounds, making it challenging to separate school instruction from its social context. Children from upper socio-economic backgrounds often thrive in elite school cultures, whereas children from lower socio-economic backgrounds may feel marginalised or excluded in such environments (Bhat, 2012). Kumar, et al., (2019) observes that in the post-RTE Act period, free education has declined and monthly per capita expenditure (MPCE) on elementary education has increased sharply. Under this backdrop of the RTE Act 2009, this paper attempts to examine the dynamics

of changes in government elementary education system of Himachal Pradesh. The state has better Gross Enrollment Ratio (GER) in elementary education as compared to the rest of India. In 2004–05, the GER was reported 108.90 and 108.50 for primary and upper primary stages, respectively; whereas the GER for elementary level was 108.74 (Government of India, 2007, p. 59). For 2014–15, the GER for primary and upper primary stage was 99.43 and 103.09, respectively; whereas the GER in elementary schools remained 100.81 (Government of India, 2018, pp. 48–50). There is an overall decline in GER in a decade for Himachal Pradesh. The state's enrollment in the government primary education system dropped from 58.6 to 54.1 per cent between 2018 and 2020 (ASER, 2021, p. 24). Moreover, the government elementary and secondary education system in the state faced a major setback when 4,994 primary schools, 1,092 middle schools, 32 high schools and 9 senior secondary schools were closed due to declining student strength, with less than 20 students in 2019. During this period, 80 primary schools in the state had no enrollment (Hindustan Times, 2020). Hence, mere enrollment in elementary education system does not guarantee equality education.

In the present context, the term 'elementary education' refers to implicit learning from Classes 1 to 8. Early childhood education comes first, followed by elementary education, before secondary education. This stage of education is critical to a child's future development and personality, and as such, it is essential to the socio-economic advancement of the country (Sen, 2009). It also serves as a base or foundation for building citizen, society and the nation, as this is the stage where a child can identify their interests, aptitudes and potential. The promulgation of the RTE 2009 has placed India among 135 countries, which have made education a fundamental right for children (6–14 years). Education is placed under concurrent list of Indian Constitution

since 1976, therefore the central and state governments both have to shoulder the responsibility for effective implementation of the Act (Juneja, 2003).

Dynamics of Elementary Education in Himachal Pradesh (2006–16)

Free and compulsory education is the most remarkable attribute of the RTE Act 2009 to affect the responsibility on the state (any representative government) to ensure quality education for every citizen, irrespective of their social, cultural and economic status (Government of India, 2009, Section 3). As the legal provisions were enacted by the parliament of a democratic state, the onus to ensure the implementation of this fundamental right fell on the shoulders of the state. With the implementation of this Act, it was expected that there would be an increase

in enrollment and that government schools would impart quality education.

In Himachal Pradesh, the state government claimed that the state's literacy rate had reached 88% and the enrollment ratio for elementary education had touched almost 100% (Business Standard, 2016). However, this bold claim by the government did not reflect the reality at the grassroots level regarding the state's role in elementary education and ensuring quality education. During the decade of 2006–16, there was an increase of 107 schools at the elementary level, although in the same period, the enrollment rate declined significantly. Approximately, two lakh students at the primary and six lakh students at the upper primary level had left the government elementary education system. Thus, the ambit of enrollment in government elementary education system has reduced significantly, even as the state is responsible for ensuring free and compulsory education for all children aged 6 to 14 years.

Table 1: Schools and Enrolment in Himachal Pradesh in 2006–16

	School	2005–06	2010–11	2015–16
Government School	Primary	10,625	10,719	10,716
	Primary with Upper Primary	8	7	5
	Upper Primary	2,112	2,304	2,131
	Total	12,745	13,030	12,852
Enrollment	Primary	54,4251	4,23,313	3,23,802
	Primary with Upper Primary	914	837	683
	Upper Primary	1,29,169	1,06,089	65,560
	Total	6,74,334	5,30,239	3,90,045

Source: Elementary State Report Cards (2005–06, 2010–11, 2015–16), NUEPA <http://udise.in/src.htm>

Similarly, when data is being analysed for the expansion of schools, there is a slight increase of 0.85% and 0.83% at the primary and upper primary stages, respectively. As the RTE Act 2009 has made it mandatory for governments to provide school in neighbourhoods within a distance of 1 km for the students of Classes 1 to 5 and at 3 km for students of Classes 6 to 8, the state

government hastily opened schools with little concern for facilities (Hindustan Times, 2022). Considering the financial and human resource management of the government, this provision seems to be impractical. It was reported that 99 primary schools with enrollment of less than five students had been closed (Digital Learning, 2016). Further, during the same period, enrollment in

private schools had increased considerably, as evident from ASER data. By 2023, a significant decline in student enrollment in government schools in Himachal Pradesh took place; it was reported that 228 primary,

56 middle and 2 high schools run by the government had zero enrollment. These schools were closed by the government from the new academic session in April 2023 (Hindustan Times, 2023).

Table 2: Student Enrollment in Class 5 in Private Schools Across Different States

Name of the State	% Class 5 Students in Private Schools			
	2012	2014	2016	Significant difference from the years (2012 to 2016)
Uttar Pradesh	50.8	51.7	51.3	0.5
Rajasthan	42.1	40.0	42.0	-0.1
Haryana	45.0	52.2	54.8	9.8
Uttarakhand	34.3	36.3	44.4	10.1
Punjab	42.3	45.5	51.6	9.3
Himachal Pradesh	27.8	34.8	40.2	12.4
Madhya Pradesh	15.5	20.4	23.7	8.2
Chhattisgarh	10.6	17.9	20.3	9.7
Maharashtra	43.6	41.0	43.4	-0.2
Tamil Nadu	28.2	33.0	34.2	6.0
Kerala	58.7	56.2	70.0	11.3

Source: ASER (Rural) 2016: p. 11

The report revealed that for the period 2012–16, there is a significant increase of 12.4% in the enrollment figures for private schools in Himachal Pradesh, the highest among the states surveyed by ASER. In the same report, Kerala stood ranked second with regard to the increase in enrollment in private schools. There were some states, like Rajasthan and Maharashtra, where the enrollment in private schools had declined during this period.

States, like Kerala and Himachal Pradesh, which performed relatively better in terms of enrollment as compared to rest of India, were slowly shifting towards private schools. The choice of school by parents is influenced by various factors, but the inadequacy of resources and facilities in government schools, compared to private schools, plays a major role in the decision to choose private schools.

Table 3: A Comparison of Reading Abilities of Children in Government and Private Schools of Various States

Name of the State	% of Children in Class 5 Who Can Read English Sentences							
	Private School				Government School			
	2012	2014	2016	Significant difference from the years (2012 to 2016)	2012	2014	2016	Significant difference from the years (2012 to 2016)
Uttar Pradesh	26.6	34.7	31.9	5.3	4.4	7.7	4.8	0.4
Rajasthan	27.8	30.4	35.0	7.2	5.1	5.4	9.4	4.3

Haryana	71.1	74.8	75.0	3.9	17.3	23.6	29.4	12.1
Uttarakhand	55.1	64.2	58.6	3.5	16.9	13.8	22.8	5.9
Punjab	72.3	77.9	83.2	10.9	36.9	29.7	34.0	-2.9
Himachal Pradesh	79.3	81.5	91.0	11.7	45.5	38.8	44.0	-1.5
Madhya Pradesh	27.3	30.0	35.9	8.6	48	43	56	8.0
Chhattisgarh	24.7	31.0	43.4	18.7	50	62	95	45
Maharashtra	26.9	31.7	34.8	7.9	16.7	14.6	22.7	6.0
Tamil Nadu	43.8	52.4	58.3	14.5	17.7	24.2	26.4	8.7
Kerala	70.0	81.5	77.7	7.7	52.4	51.4	57.4	5.0

Source: ASER (Rural) 2016: p. 11

Furthermore, the ASER also highlights the standard of learning in government and private schools. During 2012–16, there was a significant increase (11.7%) in the English reading ability of Class 5 students of private schools in Himachal Pradesh, while government schools saw a decline of 1.5%. Moreover, the report revealed that by 2016, the difference in the performance

of government and private schools had widened. In 2012, the difference was 33.8%, whereas in 2016, it rose to 47%. The ASER data also show that on one hand, the learning outcomes in private schools were improving, on the other, government schools' performance was consistently deteriorating, as observed from the figures for states like Punjab and Himachal Pradesh.

Table 4: Arithmetic Proficiency of Class 3 Students of Himachal Pradesh

Year	% of Children in Class 3 Who Can Subtract		
	Government	Private	Government & Private
2010	53.9	76.0	60.4
2012	39.5	72.6	50.3
2014	40.6	70.6	52.4
2016	48.4	66.7	57.4

Source: ASER (Rural) 2016: p.11

With regard to learning arithmetic at the primary level, the state did not perform satisfactorily. The ASER indicates that arithmetic proficiency at the primary level had declined in both government and private schools during 2010–16. At the primary level, only 48.4% Class 3 government school students were able to solve subtraction problems, compared to 66.7% private school students. The state government's promise to provide free and compulsory education is meaningless if that education does not improve the learning outcomes of students from marginalised sections of society. Thus, with regard to language and arithmetic,

the learning outcomes of government schools were not satisfactory. Moreover, the deteriorating quality of education in government schools had reduced the social prestige of this system, gradually leading to a decline in the student enrollment ratio in these schools.

The RTE Act and Teachers in Government Elementary Schools

India is celebrating its 75th year of Independence; yet policymakers have not reached a consensus on how many teachers should be appointed at the primary stage. Section 25, along with the Schedule of

the RTE Act, has established a scheme for pupil-teacher ratio at the primary and upper primary stages. The criterion has been fixed with regard to the total number of students in a school, irrespective of their distribution across classes or subject-specific specialisations. This has diluted the norms and standards for ensuring adequate number of teachers in primary schools.

According to the RTE Act 2009, the student-teacher ratio (excluding the head teacher) should not be more than 40. There should be one teacher for every 30 students, two teachers for up to 60 students, three teachers for 61–90 students, four teachers for 91–120 students, five for 121–200 students, and one head teacher along with five instructors for 150–200 students. The statute specifies that social studies, languages, and science and math would each require a single teacher (RTE Act, 2009 Schedule). It is surprising to note that the state does not have a dedicated position for a Trained Graduate Teacher (TGT) in English. Effective language learning can only be ensured if schools have dedicated teachers for both the languages i.e., English and Hindi.

Vygotsky, in his theory of learning, has identified speech and language as the

fundamental stage for learning, as well as an important area of skill in its own right (Camileri, 2012). The state government schools in Himachal Pradesh have five approved teaching positions for upper primary level viz. TGT non-medical (for teaching science and arithmetic), TGT Arts (for teaching English and social studies), Oriental Teacher (for Sanskrit and Hindi), Drawing Master (DM) and Physical Education Teacher (PET for physical education). If these teaching positions are compared with Central School and Navodaya Vidyalaya, which are considered as model schools to be emulated by state governments, there is a wide discrepancy with regard to TGT positions between central and state government schools at the upper primary level. Central Schools have dedicated TGT positions for each subject, including TGT-English, TGT-Hindi, TGT-Sanskrit, TGT-Maths, TGT-Science, TGT-Social Science, TGT-Art Education, TGT-Work Experience, TGT-Library, TGT-Physical and Health Education. As the upper primary stage is the most critical stage for conceptual understanding, any shortfall in the availability of specialised subject teachers hampers the learning process.

Table 5: Single-Teacher Schools in Himachal Pradesh (2002-16)

Years	% of Single-Teacher Schools		
	Primary	Primary + Upper primary	Upper Primary
2005–06	13.2	0.0	3.5
2015–16	11.9	0.1	6.0

Source: Retrieved from www.udise.in Act 2009. NIEPA, New Delhi

During 2006–16, there was a decline of 1.3% point (13.2–11.9) in single-teacher schools at the primary level. However, during the same period, the number of teachers in primary schools decreased from 25,402 to 25,002, reflecting a reduction of approximately 400 teachers. Further, at the upper primary level, single-teacher schools increased to 6% for the year 2016 from 3.5 in 2006, with the actual

number of teachers declining from 8,746 to 7,562, marking a drop of 13.53%. By 2022, 12 primary schools were working without teachers, while 2,969 primary schools and 51 middle schools were functioning with a single teacher (Hindustan Times, 2022).

Primary education constructs the foundation of cognitive processes, and without adequate teachers or with a single

teacher, how far we can expect the holistic development of children as the role of an

adult as a facilitator has been underscored (Vygotsky, 1978; Wertsch, 1985).

Table 6: Teachers working in Government Schools in Himachal Pradesh (2006–16)

Years	Teachers		
	Primary	Primary + Upper primary	Upper Primary
2005–06	25,402	58	8,746
2015–16	25,002	47	7,562

Source: Retrieved from www.udise.in Act 2009. NUEPA, New Delhi

The data reveal that a decline in single-teacher schools. It is also evident that the actual number of teachers and enrollment has simultaneously decreased during this period. Although a decline of 1.3% point in single-teacher schools at the primary stage did not indicate how many schools have the full strength of teachers, as no consensus or standard has been established by the government with regard to the required number of teachers per school at the elementary level. How can we ensure that providing two or three teachers for the lower primary level will guarantee quality education, given that the learning process and cognitive skills vary significantly, even among students in Classes 2 and 3?

The state's elementary education system is struggling to ensure quality education. There is a shortfall of approximately 1,600 teachers in the elementary system over a decade from 2006 to 2016. During the period, the upper primary stage experienced a decline of 13.53% teachers, highlighting the state government's commitment to education. According to the U-DISE data, the pupil-teacher ratio had improved from 20 to 12 between 2006 and 2016. But this statistic is misleading as at this stage, two lakh children had left government primary schools during this period. Similarly at the upper primary stage, pupil-teacher ratio had improved from 15 in 2006 to 9 in 2016. This happened because six lakh children withdrew themselves from the system.

Table 7: Pupil-teacher Ratio in Government Schools of Himachal Pradesh (2006–16)

Years	Pupil-Teacher Ratio (PTR)	
	Primary	Primary + Upper primary
2005–06	20	15
2015–16	12	9

Source: Retrieved from www.udise.in Act 2009 NUEPA, New Delhi

When analysing the DISE data for the number of teachers per school at the primary and upper primary stages, it was found to be less than one (0.42) and two (1.69) teachers, respectively. Although the data reveal that the pupil-teacher ratio has improved, it does not provide information on the actual number of teachers in each school across the state. Given the state's difficult geographical terrain, it is unlikely that teachers are evenly distributed across schools in different parts. In government schools, there are around 68,300 authorised teaching positions but 20% of these positions remain vacant. For primary, middle and senior secondary schools, the average teacher-to-student ratio is 12.83; for high schools, it is 11.32; and for both, it is 11.6. While this may be significantly higher than the national average, an unusual scenario has been created by the haphazard establishment of schools and the unreasonable deployment of teachers. (Lohumi, 2022).

A new trend has emerged in the state's elementary education system. The profession is attracting people with higher qualifications. There is rapid increase in the number of

people having graduation, post-graduation and M.Phil degrees. A significant shift has been observed with regard to more qualified people joining the primary level compared to the upper primary level. It can be argued that as job opportunities were greater at the primary level, more qualified people opt for it. Additionally, social security and lucrative salary have attracted qualified aspirants to the profession.

Physical Infrastructure

The primary education system in India is still operating with minimal resources. Operation Blackboard, launched in 1986, aimed to provide minimal infrastructure, including two rooms with blackboard, two teachers and teaching-learning aid in government schools (Government of India, 1987). Dyer (1999), in her case study on the implementation of Operation Blackboard, revealed that it was difficult to change the status quo because actors at all levels of implementation did not perceive themselves as having any stake in the changes that were suggested. The teaching-learning kit, which was designed in Delhi, was hardly used by the government school teachers in the villages and towns of Gujarat, as they did not know how to use it with their regular classroom instruction. It is a common misconception among policymakers that choosing to implement change will inevitably alter institutional behaviour or policy (Dyer, 1999).

More than three decades have passed since the launch of Operation Blackboard, yet the government has not made progress in equipping government primary schools with adequate facilities like five rooms for each class (1 to 5), a playground, indoor games, a library with books and a dining hall. Despite India aspiring to become the world's largest economy, it has not standardised its public education system. Data are still being collected for reflecting minimum facilities like single-classroom schools, schools with boundary walls, drinking water facility and toilets in government schools (NCERT, 2017). Over a decade has passed since the RTE Act

2009 was implemented. However, by 2022, out of 15,313 government schools, seven primary and three middle schools had no classrooms. Additionally, 338 primary, 216 middle and 76 senior secondary schools had only one classroom, while 2,495 primary, 241 middle and 25 senior secondary schools operated from just two rooms in the state (Hindustan Times, 2022). Almost every school had restrooms and drinking water facility. Approximately, 89 per cent schools had libraries but there was no dedicated librarian in primary and upper primary government schools. There were 23.57 per cent schools without playgrounds and 31.71 per cent without boundary walls. Furthermore, 79.3% schools lacked computers, and 86.09% had no Internet access, despite the emphasis on technology-driven and online learning (Lohumi, 2022)..

Conclusion

The state experienced growth in elementary education after the Sarva Shiksha Abhiyan was launched in 2002. But after the implementation of the RTE Act 2009, this growth did not sustain, and there was a steady downfall in the number of schools and enrollment in government schools. The gaps and ambiguities in the RTE Act itself provided enormous scope for states to execute the Act in their own way. Himachal Pradesh, in particular, did not frame strict guidelines for implementing the RTE Act. Moreover, the state was not financially supported by the Central government to strengthen its education system. A large number of schools continue to operate with one or two teachers and only two to three rooms. The elementary stage requires greater focus and personal attention from teachers for effective learning, but it remains inadequately supported.

Growth in education; if it does not ensure quality it fails to qualify as 'free and compulsory' because the student enrolled in education could not utilize her/his education for exploring career opportunities nor they can prove his worth in hereditary occupation. During the decade from 2006 to 2016, 42.16%

students left the government elementary education system in the state. During the same period, enrollment in private schools rose from 27.8% to 40.2% at the primary level. This reflects the declining prestige of government schools and preference for private schools. The enactment of the RTE Act created the expectation that the state would take proactive measures to uphold this fundamental right by strengthening the

public education system, thereby making education a tool to mitigate social inequalities and ensure equal democratic rights for all citizens. However, the weakening of the public education system and the emergence of a strong private education system at the elementary level not only undermines the state's responsibility towards its citizens but also weakens the participation of citizens in preserving and protecting public institutions.

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Equitable and Inclusive Education through Continuous Professional Development of Teachers

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Abstract

This paper explores the impact of Continuous Professional Development (CPD) on the quality of in-service teacher education in India, with a particular focus on adopting equitable and inclusive educational practices. Through a critical analysis of 28 studies, the research synthesises five core themes that highlight the connection between CPD and the promotion of inclusive classrooms. These themes emphasise shaping inclusive educational policies, enhancing teacher preparedness through targeted training programmes, and leveraging technology to improve access and engagement for all students. The study stresses the need for dynamic CPD frameworks that adapt to the evolving educational landscape, fostering ongoing teacher development and ensuring alignment with national inclusivity goals. The findings suggest actionable strategies for policymakers and educators to create a fairer and inclusive educational system, ultimately augmenting learning outcomes for a diverse student population.

Keywords: *Inclusive classroom, continuous professional development, in-service teacher education, inclusive educational policies*

Introduction

The role of education as a transformative tool has become increasingly apparent in the rapidly evolving educational landscape, characterised by technological, pedagogical and societal changes. With its large young population, India stands at a crucial juncture where the quality of school education can significantly influence its future trajectory. At the core of this educational promise is the teacher, who plays a pivotal role in moulding the minds that will define the nation's future. Continuous Professional Development (CPD), an integral part of in-service teacher education, emerges as a critical element in this transformative journey. It serves as a dynamic medium that enables educators to refine their expertise, integrate equity and inclusivity into their teaching methodologies, and directly impact the educational system and the lives

of students across diverse backgrounds (MHRD, 2020).

In-service teacher education, particularly through CPD, extends beyond refining teaching skills to foster a just and inclusive educational environment. The National Education Policy 2020 (NEP 2020) advocates for an educational framework that addresses each student's unique needs, irrespective of their circumstances, establishing equity and inclusion as foundational principles (MHRD, 2020). Implementing these principles necessitates empowering educators with the requisite skills and knowledge to create learning environments where each student can thrive. Programmes like India's National Initiative for School Heads and Teachers Holistic Advancement (NISHTA) on the Digital Infrastructure for Knowledge Sharing (DIKSHA) platform exemplify the nation's commitment to these values, providing educators with necessary CPD opportunities

to enhance instructional quality and foster an inclusive educational landscape (MHRD, 2020).

Therefore, in-service teacher education is not merely about upgrading pedagogical skills but also about instilling the ethos of inclusion and equity—crucial for addressing the diverse needs of students. It equips teachers to adapt to a variety of learning styles, cultural backgrounds and educational needs, facilitating a learning environment where diversity is embraced and all students are supported to achieve their full potential.

This paper tries to explore the evolving nature of in-service teacher education in India, highlighting its significance in promoting an equitable and inclusive educational system. By analysing various studies and educational programmes, it seeks to outline effective strategies and best practices that can be employed to enhance the scope and impact of CPD, contributing significantly to the broader educational reforms aimed at achieving equity and inclusivity in education (Singal, 2006; Bourke, 2009; Feng, 2012).

Methodology

A comprehensive literature review approach was employed to investigate the pivotal role of CPD in fostering equitable and inclusive education in India. A systematic analysis of secondary data from 2000 to 2023 was conducted, resulting in the selection of 28 research based on their relevance to CPD, educational equity and inclusivity in the Indian context. Additional studies included in the review focused on the effectiveness of in-service training, teacher readiness for inclusive education and the challenges in implementing India's latest National Education Policy.

The search process utilised renowned databases like ERIC, Scopus and Google Scholar, followed by a rigorous screening process to ensure the inclusion of only high-quality, peer-reviewed articles, government reports and key educational frameworks. This approach ensured that only the

most relevant and credible sources were incorporated.

The review involved reading and analysing each study to assess the impact of CPD on education. A qualitative approach was employed to synthesise insights into the alignment of CPD programmes with inclusive education goals, the effectiveness of training initiatives and the integration of technology in education. This required extracting data on the effectiveness of training modules, teacher satisfaction with CPD and observed changes in teaching practices post-training.

A thorough synthesis of the findings identified key patterns, themes and trends, offering a detailed perspective on the role of CPD in promoting equitable and inclusive education in India.

Review of Related Literature

This literature review examines a range of studies on inclusive education and teacher professional development, exploring the dynamic interplay between these fields and their impact on inclusivity and equity. By analysing the research findings, it highlights key themes and patterns, examines the interconnectedness of teacher education with inclusivity goals, and extracts valuable insights for policy and practice. Ultimately, the review seeks to enhance the understanding of these complex relationships, enabling policymakers and educators to better support diverse learners in inclusive environments.

Inclusive Education Policies and Implementation: Advancing inclusive education involves the continuous development and refinement of policies to address the diverse needs of learners. The discourse highlights the importance of contextual awareness in policy implementation, influenced by national, cultural and socioeconomic factors.

Singal (2006) and Bourke (2009) stress that policymakers must consider the specific regional, cultural and historical contexts to effectively translate policies into practice.

Feng (2012) and Singal (2019) note that high-quality teaching is essential for successful inclusion, requiring teachers to possess the skills and knowledge to accommodate all students. Further insights emerge from Rangarajan, Sharma and Grové (2023), who critically evaluate NEP 2020, assessing its commitment to inclusivity and equity, while identifying potential benefits and challenges.

Professional Development for Inclusive Education: Professional development is essential for equipping educators with the knowledge, skills and attitudes necessary to foster inclusivity in classrooms.

Key research studies conducted by Bourke (2009), Forlin and Chambers (2011) and Chitiyo, et al. (2017) highlight the importance of such training. Innovative methodologies, collaborative processes and critical reflection are central to creating an inclusive culture, as noted by Walsh, et al. (2018) and Haerani, et al. (2020).

Studies by Holmqvist and Lelinge (2021) and Wright and Delgado (2022) examine the effectiveness of various development models, while Ponnusamy and Sankar (2022) provide insights from a study in Kerala, exploring local teachers' perceptions and the impact of these programmes. Collectively, these studies emphasise the need for continuous, context-specific and collaborative professional development that promotes inclusivity, equity and social justice.

Technology Integration and Online Education: The rise of digital technologies and online platforms has transformed professional development, bringing both challenges and opportunities. The COVID-19 pandemic accelerated this shift, with researchers like Dhurumraj, et al. (2020) and Walsh, et al. (2018) highlighting the crucial role of technology in providing flexible and accessible learning for educators. This transition has enabled remote access to professional development resources, fostering a culture of continuous learning and collaboration.

Davis and McGill (2023) discuss how online education can democratise access

to educational resources across urban and rural areas, promoting equity. Similarly, Waitoller and Artiles (2013) highlight the role of technology in training for inclusive education, noting its potential to improve teacher readiness and support diverse learners. Overall, technology's integration into professional development significantly improves accessibility, personalisation, collaboration and teacher preparedness for inclusive education.

Diversity and Inclusive Practices: Effective teacher education requires a comprehensive approach that acknowledges and values the diversity of learner identities, experiences and backgrounds. Researchers like Sacramento (2019) and Wright and Delgado (2022) emphasise addressing gender and sexual diversity in professional development programmes. Bacus and Alda (2022) and Massar (2022) highlight the need for inclusive curricula and thorough teacher training to support a diverse student body. Lang, et al. (2023) advocate for educational practices that cater to the varied cultural, linguistic and educational needs of students. Additionally, Dheesha (2020) underscores the importance of raising awareness about disability and inclusivity in teacher education, fostering a deeper understanding of the intersections between identity, culture and learning.

Policy Alignment and Educational Goals: Aligning educational policies with inclusive education objectives is a key theme in the literature. NEP 2020, along with studies by Flood and Banks (2021) and Davis and McGill (2023), emphasise the role of CPD in promoting educational equity and empowering educators to create inclusive learning environments. Solomon, et al. (2023) explore the impact of policy on teacher learning and practice, highlighting the interplay between policy frameworks and the goals of inclusive education. This relationship is crucial for supporting inclusive practices through policy at all levels of the education system, as seen in countries like India.

Table 1: Thematic Categorisation of Related Literature

Theme	No. of Studies	Authors	Description
Inclusive Education Policies and Implementation	7	Singal (2006); Bourke (2009); Bourke (2009), Feng (2012); Singal (2019); Flood and Banks (2021); Rangarajan, et al. (2023)	This theme examines the advancement and challenges of inclusive education policies and programmes in different national contexts, including local educational landscapes. It emphasises on contextual understanding and quality teaching, with a specific look at NEP 2020.
Professional Development for Inclusive Education	10	Bourke (2009); Forlin and Chambers (2011); Chitiyo, et al. (2017); Walsh, et al. (2018); Haerani, et al. (2020); Holmqvist and Lelinge (2021); Wright and Delgado (2022); Ponnusamy and Sankar (2022); Joshi, et al. (2020); Mistry (2023)	This theme encompasses research on training programmes that improve teacher capabilities to support diverse learning needs, drawing attention to sustainable and context-specific professional development with collaborative and reflective training models.
Technology Integration and Online Education	4	Dhurumraj, et al. (2020); Walsh et al. (2018); Davis and McGill (2023); Fleming (2023)	It focuses on the shift towards digital platforms (especially during COVID-19) that facilitate accessible and flexible CPD opportunities. This theme also examines how technology can bridge gaps in teacher training and support inclusive practices.
Diversity and Inclusive Practices	7	Sacramento (2019); Wright and Delgado (2022); Bacus and Alda (2022); Massar (2022); Lang, et al. (2023); Dheesha, (2020); Mistry (2023)	It addresses the specific needs of diverse learners, including gender and cultural diversity, through professional development. This theme focuses on inclusive curricula and teacher preparation, enhancing disability awareness among prospective teachers.
Policy Alignment and Educational Goals	6	NEP 2020; Flood and Banks (2021); Bacus and Alda (2022); Davis and McGill (2023); Solomon, et al. (2023); Waitoller and Artiles (2013)	This calls attention to aligning educational policies, especially NEP 2020, with the goals of inclusive education. The findings show the critical role of policy in supporting effective CPD and ensuring educational equity, with the need for policies that are continuously evaluated and aligned with current educational demands.

Table 1 categorises research into five critical themes, outlining how studies examine the evolution of inclusive policies, the enhancement of teacher capabilities through targeted professional development, the role

of technology in bridging training gaps, the addressing of diverse learner needs through specific educational practices and the alignment of educational goals with policy frameworks. Each section draws

from a range of studies to underscore the collective pursuit of inclusivity and equity in educational settings

Discussion

A comprehensive review of related literature underscores the pivotal role of in-service teacher education in promoting equitable and diverse education in India, highlighting a growing scholarly focus on the intricate dynamics of teacher professional development in relation to inclusivity and equity.

The literature emphasises the necessity of embedding cultural and contextual relevance within CPD programmes, advocating for a localised approach to teacher education that acknowledges the diversity of Indian classrooms (Singal, 2006; Bacus and Alda, 2022). This approach calls for customised educational strategies that address the unique needs of Indian learners, recognising the importance of context-specific solutions (Singal, 2006; Bacus and Alda, 2022; MHRD, 2020).

Studies also highlight the transformative potential of digital platforms like NISHTHA and DIKSHA in expanding access to CPD, reflecting a global shift towards online learning that has been accelerated by the COVID-19 pandemic (Dhurumraj, et al., 2020; Haerani et al., 2020). This transition promotes more flexible, inclusive and accessible professional development models, capable of reaching a wider audience of educators and ultimately enhancing the quality of education in India.

Additionally, research underscores the importance of policy alignment and the integration of Universal Design for Learning (UDL) within CPD frameworks, advocating for a systemic approach to nurture inclusivity and equitable learning environments (Flood and Banks, 2021; Lang, et al., 2023). Implementing UDL can facilitate the refinement of flexible and responsive teaching practices, ultimately improving the learning experiences of diverse students.

An example of UDL integration in CPD

is presented in a case study from the *Journal of Teaching and Learning with Technology*, which describes its application in an undergraduate course supported by educational technology to foster greater student engagement and inclusivity. The study details course modifications that provided students with various options for engaging with the content, their peers and instructors, aiming to enhance their sense of belonging and academic achievement. This approach effectively demonstrates how UDL principles can be applied in teacher development programmes to accommodate a wide range of learning preferences and needs, fostering an inclusive educational environment.

Holmqvist and Lelinge (2021) emphasise the significance of collaborative practices and professional networking, suggesting a collective movement towards shared learning, communal growth and a culture of inclusivity in education. Such approaches encourage the exchange of ideas, strategies and resources, contributing to a more inclusive and supportive educational ecosystem. This collaborative ethos can further help address the complex challenges of inclusive education, ensuring that all students receive the support and opportunities they need to thrive.

Further, studies by Ponnusamy and Sankar (2022) and Waitoller and Artiles (2013) offer insights into the effectiveness of in-service training programmes in Kerala, highlighting the need for policy-driven support to foster inclusive practices. These studies reinforce the idea that effective CPD programmes must reflect the diverse needs of educators while aligning with broader educational goals and priorities.

In essence, the emerging literature highlights a paradigm shift in in-service teacher education, marked by a move towards more inclusive, adaptable and culturally congruent practices. This shift aligns with global trends in educational equity while resonating with India's unique sociocultural landscape, necessitating a renewed focus on teacher

CPD as a cornerstone of transformative educational change.

Results

In India's evolving educational landscape, the need for fair and diverse education calls for actionable strategies to empower educators in meeting diverse student needs. This study provides a systematic review of pertinent literature, presenting evidence-based practices to enhance inclusivity and equity. These practices form a roadmap for educators, policymakers and stakeholders to collaboratively develop a supportive educational system that serves all students, regardless of their background or abilities.

Culturally Responsive Teaching Training: Culturally Responsive Teaching (CRT) is essential in India's diverse classrooms as it addresses the varied cultural, linguistic and socioeconomic backgrounds of students. CRT training equips teachers with the skills to recognise and value this diversity, enriching the learning experience by incorporating local knowledge and cultural nuances. This method not only makes education more relevant and engaging but also ensures inclusivity, with teaching methods specifically adapted to reflect the real-world experiences of the community (Davis and McGill, 2023; Sacramento, 2019).

Moreover, in India's diverse linguistic landscape, CRT plays a crucial role, particularly in supporting students who are not fluent in the instructional medium, such as Hindi or English. Effective CRT training includes language inclusion strategies that provide all students with equitable access to the curriculum, helping overcome language barriers that can impede academic progress. Research studies by Mistry (2023) and Ponnusamy and Sankar (2023) highlight the benefits of CRT in meeting the needs of marginalised communities. Expanding these programmes nationwide can help reduce biases and stereotypes while equipping educators to effectively and manage embrace

classroom diversity. This initiative aligns with India's educational reforms aimed at fostering equitable learning environments



Figure 1. Effective Practices under Culturally Responsive Teaching [Source: Culturally Responsive Teaching: Theory, Research and Practice (Gay, 2018)]

where all students can thrive, irrespective of their sociocultural backgrounds.

Regular Professional Development: Emphasising the continuous nature of professional development is crucial, aligning with NEP 2020 recommendations for educators to engage in at least 50 hours of CPD annually. This tailored approach addresses educators' interests and needs, covering advanced pedagogies, such as Foundational Literacy and Numeracy (FLN), competency-based learning and innovative teaching methodologies (NEP 2020).

Online and Blended Learning: Acknowledging the significant role of online and blended learning platforms, this approach offers flexible, accessible and cost-effective professional development opportunities. It ensures equitable access for all educators, promoting inclusive learning environments, irrespective of geographical or demographic diversities.

Gender Diversity Inclusive Curriculum: Thoughtful pedagogical adjustments, curriculum design and other modifications also ensure gender inclusivity and equity within educational practices, promoting a supportive and inclusive learning environment for all.

Policy Alignment: Ensuring congruence between educational policies and the objectives of inclusive education is paramount. Regular assessments of policy efficacy in fostering equitable education, alongside clear definitions of professional development delivery protocols, are essential for sustained progress.

Professional Collaboration: Encouraging collaborative professional development among teachers, including teacher aids, encourages knowledge sharing and builds a supportive and inclusive educational culture. This collective approach persuades educators to work together, share best practices and support one another in creating inclusive learning environments.

Universal Design for Learning: It provides a structured teaching approach, emphasising multiple means of representation, expression and engagement to ensure equal learning opportunities for every student,

regardless of their abilities or backgrounds. Studies by Waitoller and Artiles (2023) and Fleming (2023) highlight the importance of integrating UDL into educational practices to improve accessibility and engagement, particularly for learners with disabilities and diverse cultural backgrounds. UDL-trained teachers can effectively implement strategies, accommodating learners with disabilities and diverse cultural backgrounds.

The integration of technology, as discussed by Dhurumraj, et al. (2020), enhances UDL's effectiveness, offering personalised learning pathways that accommodate various sensory and cognitive needs. Systematic professional development, including UDL-focused workshops, is crucial for equipping educators with necessary skills and tools to design flexible curricula and assessments, thereby aligning teaching practices with the principles of equity and inclusivity.

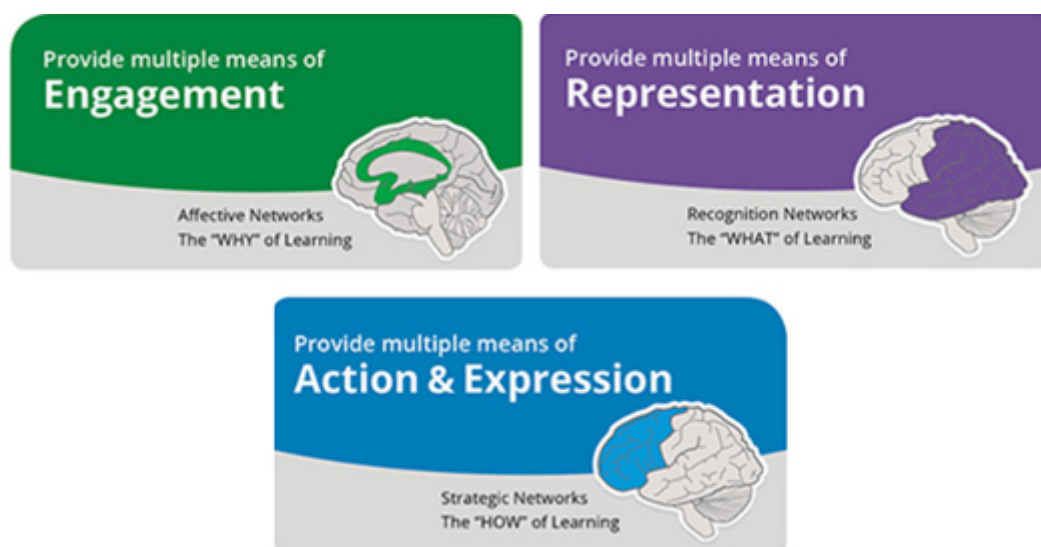


Figure 2. A graphic organiser of the principles of Universal Design for Learning [CAST (2018). Source: <http://udlguidelines.cast.org>]

Teacher Motivation and Retention: Addressing teacher motivation, diversity within the teaching community and job satisfaction during professional development are equally important. These can contribute to increased teacher retention, directing

a positive outlook towards inclusion and a more stable educational workforce.

Momentum for Change: Sustaining continuous momentum in educational practice transformation is essential. This requires aligning with policy reforms,

developing inclusive curriculum frameworks and designing professional development training programmes based on evidence-based practices to assess their impact on outcomes. This approach ensures that educational practices remain dynamic, responsive and effective in promoting inclusivity.

The Use of Terminology and Language:

Clarifying the use of terminology and language related to special and inclusive education is vital to prevent confusion and ensure that students with disabilities receive appropriate education (Walsh, et al., 2018; and Chitiyo, et al., 2017). Consistent and accurate language use supports communication, collaboration and resource allocation, ultimately leading to better outcomes for students with diverse needs.

These findings provide a roadmap for addressing the diverse needs of students and educators, ensuring access to quality educational experiences for all while reflecting global trends and adapting to India's unique sociocultural context. By embracing these practices, a more inclusive, supportive and effective educational system can be created, benefiting all stakeholders.

Conclusion

This paper examines the role of CPD in promoting equitable and inclusive educational practices in India. By analysing a variety of studies, it identifies key strategies for improving in-service teacher education, emphasising the necessity for adaptable CPD frameworks that align with the dynamic educational requirements and India's diverse learner demographics. The findings advocate for structured professional training that improves teacher efficiency in inclusive settings, supported by policy adjustments and technological advancements that augment educational access and engagement.

Furthermore, the study underscores the importance of strategic collaboration among educators, policymakers and educational stakeholders to implement these initiatives effectively. This collaborative approach is essential for refining educational practices to ensure they meet the needs of all students. To conclude, this paper advocates for a systematic and reflective approach to CPD, suggesting that well-informed and well-implemented teacher development programmes are key to achieving educational equity and excellence, ultimately preparing all learners for a successful future in a diverse society.

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Household Factors and Gendered Education Gaps in Rural Kashmir

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Abstract

Relying on a qualitative research paradigm, this study explores the role of various household factors in school dropouts (Classes 1 to 10) among Muslim girls in rural areas of Kulgam district, Kashmir. The study consisted of 30 participants, from whom data was collected through in-depth semi-structured interviews. Their responses were subsequently analysed using Braun and Clark's thematic analysis framework. The findings identified a range of multifaceted and interrelated household factors contributing to female school dropouts, including gender discrimination, poverty, patriarchy, a culture of illiteracy, increased workload and household structure. Additionally, concerns for daughters' safety, family health issues, household conflicts and parental imprisonment were reported as contributing factors. Hence, policymakers and educationists are encouraged to raise awareness regarding the need and significance of educating girls, particularly in rural areas of Kashmir, to ensure equitable access to education.

Keywords: Girl school dropouts, patriarchy, poverty, culture of illiteracy

Introduction

Education has been globally recognised as a basic human right (United Nations, 1948), and the Sustainable Development Goal 4 (SDG4) stresses ensuring equitable education for all. Consequently, many countries have made remarkable progress towards achieving SDG-4, and India is no exception. Article 21-A of the Indian Constitution has made schooling free and compulsory for all children upto the age of 14 years. To support this, the Government of India (GoI) launched the Mid-Day Meal Scheme (MDMS) in 1995 to provide free lunches to children in schools and the Sarva Shiksha Abhiyan (SSA) in 2001 to proliferate the accessibility of primary and middle schools for providing free education. However, not all children benefit from these initiatives due to various social and structural problems, leaving many out-of-school. Such children can be

categorised into two groups—those who have never attended school (never enrolled) and those who had initially enrolled but later dropped out (dropouts) in any class (Mughal and Aldridge, 2017).

India has an estimated 11.9 million out-of-school children in the age group of 6 to 13 years (UNICEF, 2014b) with the number of girls being higher than boys (UNICEF, 2014a). A 2022 recent GoI report indicates that the dropout rate in India is 1.5% (1.6% among boys and 1.4% among girls) at the primary level, 3 per cent (2.7% among boys and 3.3% among girls) at the upper primary level and 12.6% (13% among boys and 12.6% among girls) at the secondary level. It further highlights that the dropout rate in Jammu and Kashmir (J&K) region is 4% (3.9% among boys and 4.1% among girls), at the primary level, 3% (2.8% among boys and 3.2% among girls) at the upper primary level and 6% (5.6% among boys and 6.3% among girls) at the

secondary level. These figures indicate that the dropout rate is higher among girls at all three levels of school education in Kashmir.

Literature Review

The disproportionate denial of educational opportunities to girls reflects the prevalence of gender discrimination in household behaviour. The issue has been widely studied, revealing a complex interplay of sociocultural and economic factors. Hooks (2000) argues that girls leave school early due to patriarchy, which devalues their education and fails to provide the necessary support for them to continue schooling. Children from families with higher socioeconomic resources are more likely to stay in school (Mingat, 2007; Grant and Hallman, 2008). In India, poverty is the primary reason for school dropouts (Sharma, et al., 2007), especially among girls. Due to patriarchal norms, investment in girls' education is lower, as they are supposed to perform household chores and not engage in employment (Smits and Huisman, 2013).

Parental illiteracy further increases the risk of school dropouts (Rao, 2000). Other household factors contributing to female school dropouts include their involvement in domestic and farm work (Sharma, et al., 2007; and Kotwal, et al., 2007), and sibling care (Patel and Gandhi, 2016). Additionally, the size and structure of the family, birth order among siblings (Buchmann and Hannum, 2001) and parental reluctance to send daughters to school (Kotwal, et al., 2007) contribute to female school dropouts.

In Kashmir, the problem of school dropouts has been studied in Anantnag (Hamid and Hamid, 2012), Pulwama (Jan and Sharma, 2019) and Ganderbal (Khan, 2020) districts, as well as among tribal children (Bhat and Khan, 2021). These studies are mostly quantitative and have largely overlooked the first hand experiences of dropout children. These articles/research papers highlight how gender discrimination, economic challenges and traditional gender roles collectively limit educational opportunities for girls. To

address the existing research gap, this study aims to explore the role of various household factors contributing to school dropouts (Classes 1 to 10) among Muslim girls in rural areas of Kashmir. It seeks to explore the household-dropout nexus as perceived by family members, and most importantly, by girl dropouts themselves.

Methodology

Study Design

A qualitative research approach has been used to gain an in-depth understanding of the phenomenon under study. This is because qualitative research seeks to listen to participants and construct an idea based on their viewpoints.

Theoretical Background

This study is grounded in the intersectionality theory, which provides a framework for understanding how individuals or groups are affected by multiple, overlapping disadvantages (Dineen, et al., 2022). Scholars employing this approach examine how various forms of inequality, such as gender, age, class and ethnicity intersect, creating more complex challenges for those facing multiple disadvantages. It allows examining how socioeconomic factors like status, gender and residence shape the educational landscape of female students in rural Kashmir.

Study Setting and Sample

The study was conducted in rural areas of Kashmir, where the dropout rate among girls is higher than urban areas. Prior to sampling, the contact details of 58 dropout girls were collected from educational institutions, but only 41 agreed to participate. Purposive sampling strategy was employed to select the participants based on a specific criteria, including being a Muslim girl dropout or a primary kin who left school between Classes 1 and 10 since 2015 (the year SDG-4 that aims to eliminate gender disparities in

education was launched), being 14 years of age or younger and belonging to rural Kashmir. The sample size was determined by

data saturation, and accordingly, 24 dropout girls and six family members of the dropouts were interviewed (Table 1).

Table 1: Socio-demographic details of the participants (n=30)

S. No.	Relation with the dropout	Age of the participant (in years)	Class of dropping out	Total siblings/daughters	No. of Sisters/Daughters	Monthly household income (₹) at the time of dropping out
P1	Self	24	4	4	2	>5,000
P2	Self	29	6	6	4	>5,000
P3	Self	15	7	3	2	>5,000
P4	Self	19	8	5	4	>5,000
P5	Self	24	8	7	4	>5,000
P6	Self	25	8	3	1	>5,000
P7	Self	26	8	4	2	>5,000
P8	Self	18	9	2	2	10,000 - 20,000
P9	Self	20	9	5	1	<50,000
P10	Self	21	10	6	1	10,000 - 20,000
P11	Self	23	9	3	2	>5,000
P12	Self	18	9	4	2	20,000 - 30,000
P13	Self	21	10	6	1	30,000 - 40,000
P14	Self	17	9	4	4	>5,000
P15	Self	22	10	3	1	<50,000
P16	Self	29	10	6	3	>5,000
P17	Self	24	10	6	2	<50,000
P18	Self	25	10	5	1	30,000 - 40,000
P23	Self	26	10	2	2	10,000 - 20,000
P24	Self	21	10	6	3	<50,000
P25	Father	55	9	5	1	<50,000
P26	Mother	58	10	7	2	>5,000
P27	Brother	31	10	6	1	20,000 - 30,000
P28	Father	42	9	3	2	>5,000
P29	Mother	38	10	3	2	>5,000
P30	Brother	36	10	7	2	<50,000

Data Collection

For data collection, in-depth semi-structured interviews were employed, prioritising the convenience of the participants. Each interview included factual, opinion and probe questions to explore the relevant details. The interviews began with a

preliminary question, “Do you remember the year you/she left school?”, followed by other open-ended questions, such as “Can you describe the circumstances in which you/she left school?” and “How is girls’ education viewed in your household?” Before each interview, the researchers introduced ourselves, explained the study’s purpose and

encouraged the interviewees to express their views freely. The interviews were digitally recorded with participants' consent to ensure that no important detail was missed. Additionally, non-verbal cues were carefully noted and incorporated into the research. The interviews were conducted in the local language between January and April 2024, with each session lasting between 30 and 50 minutes.

Analysis and Ethics

The recorded interviews were analysed using Braun and Clarke's (2006) thematic analysis framework, which involved gaining data familiarity, generating initial codes to organise the information, identifying the primary themes and reviewing them, followed by the determination of the final themes and presenting the findings. Throughout each phase of analysis, trustworthiness standards, outlined by Lincoln and Guba (1985), were followed to ensure rigor in qualitative research. Participation in the study was voluntary, with informed and unambiguous consent obtained from all participants. They were also free to withdraw from the study at any stage. To maintain confidentiality, the identities of the participants were not disclosed and they were assigned numbers or given pseudonyms while documenting their narratives.

Results and Discussion

The data analysis identified several household factors contributing to school dropouts among rural Muslim girls, which are presented in this section under the following overarching themes.

Gender Discrimination

Although governments have made several efforts to promote girls' education, disparities in access to education and jobs for women persist in some societies (Khanal, 2018). The pro-male bias in parents regarding investment on children's education creates

a discriminatory household environment, where education is largely perceived as a male-specific pursuit. In such households, girls are conditioned to prepare for traditional and domestic roles only, leaving them with little or no scope to continue their schooling. The research findings confirm that parents' discriminatory attitude regarding investment on children's education favours boys, while it is hostile for the academic achievements of girls. This discourages the girl child, instils in her a sense of inferiority and gradually diminishes her interest in studies.

Salma (P16), during her school days, would often sense her parents' unwillingness and reluctant attitude towards fulfilling her educational needs, which finally turned her into a school dropout. She contended: "My parents were extremely indifferent whenever I asked for stationary, clothing or school fee. They would either delay without giving a reason or provide me with the cheapest options possible. Unlike me, my brother's demands were met promptly, with ease and due respect was given to his choices. Often, my parents would say, 'You are a girl, and it doesn't matter for you.' Gradually, I came to believe that a girl's education held no value, and with each passing day, I lost interest in studies. As a result, I failed my Class 10 examination. Despite my emotional pleas and tears, my parents refused to let me reappear for the exam, arguing that I was incapable, and hence, unfit for further education.

It was found that parental preference for investing more in sons' education over daughters' becomes evident, particularly when families have insufficient resources, lack awareness about girls' education and expect sons to look after them in old age. Contrary to Salma's experience, a mother (P26) expressed that the unequal investment in a girl's education is not deliberately induced by parents, but is often driven by unawareness and the household's financial constraints in supporting the expenses of all school-going children. She said, "Due to the lack of resources at home, we couldn't fulfil the educational requirements of all our

children equally. However, we prioritised our son's education, even taking to debt to ensure his schooling remained uninterrupted. This is because our community places great emphasis on educating boys as they are more likely to get paid employment and provide for their families in future. Until recently, girls were rarely sent to secondary schools here, and we, too, were unaware of the importance of their education."

Another participant (P18), while highlighting parental preference for the education of boys, shared, "My parents always prioritised my brothers' education over mine, which gradually diminished my interest in studies and ultimately compelled me to leave school."

Yet another participant (P29) opined, "Compared to boys, the education of girls is considered less important. When girls attend school, there is a concern that they may form relationships with boys, which is undesirable. My daughter-in-law and my son developed a relationship while studying together at school and later got married. Therefore, it is unfair to allow teenage girls to continue their education beyond high school."

Moreover, the perception that educating girls yields no return, unlike boys, made some parents discontinue their daughters' schooling. A father (P25) explained, "Tell me what benefits will I get from educating my daughter? After marriage, she will shift to her in-laws' house. It is futile to educate her, so I stopped her schooling. Now, at least she can contribute to the family's work. Yes, educating sons is worthwhile as they will live with us and take care of us in old age."

During the COVID-19 pandemic, educational institutions worldwide switched to the online mode of learning. However, this shift led to a widespread digital divide (Rashid and Yadav, 2020) among people based on factors, such as class, gender, age, culture and location. Only students with access to smart phones or computers/laptops with Internet connectivity could attend online classes. A school dropout (P12) shared, "Although every male member in our house owned a

smart phone, my older brother refused to let me use one as I am a girl. As a result, I missed all online classes and was forced to discontinue my studies."

Poverty

Poverty is inextricably linked with academic failure (Gil, et al., 2019) and school dropouts, particularly among girls (Chugh, 2011). The findings of the study revealed that although public schools in Kashmir do not charge tuition fee, expenses related to admission, uniform, transportation, lunch, books and stationery place significant burden on girls from poor households, limiting their access to education. Several dropouts shared their experiences, with one (P5) stating, "I would often feel hopeless for not having a proper bag, uniform and notebooks. My parents somehow managed to educate me up to middle school, but beyond that, they could no longer afford my educational expenses. So, I had to quit."

Another dropout (P14) shared, "Due to poverty, I was exempted from tuition fee at school (private). However, my family was unable to support expenses related to books, uniform and stationery. I often felt deprived and eventually decided to drop out."

Due to poverty, some households struggled for basic amenities, including food, and educating girls in such conditions seemed like an unattainable goal. One dropout (P20) expressed, "After failing in one of the subjects in Class 10, I couldn't pay the examination fee for reappearing due to extreme financial constraints at home."

Another (P3) shared, "We were so deeply affected by poverty that many times, we had nothing to eat. How can a girl continue her studies in such a difficult situation? Of course, government schools do not charge tuition fee, but that alone is not enough for a girl to continue her education."

A few participants noted that in government secondary schools, students do not receive adequate instruction and guidance, particularly in subjects like mathematics and

science, making private tuition necessary. However, not all students could afford this. One dropout (P21) recounted, “At the beginning of the session, all my classmates joined private tuitions, but I couldn’t do so because of my family’s poor financial conditions. I had to rely solely on school classes, where only 40% of the syllabus was covered in the entire session. As a result, I couldn’t pass the final exam. Poverty prevented me from reappearing as I could not pay the exam fee again, and I eventually decided to learn embroidery instead.

Another girl (P20) who had dropped out said, “I failed in mathematics, as we were not taught the subject properly at school. All my classmates went for private tuition, but I couldn’t afford it due to poverty.”

Patriarchy

Feminists attribute disparities in women’s access to education to the existing gender-based division of labour, which perceives women as primarily suited for domestic work, along with men’s control over women’s sexuality by regulating their movement outside the household (Stromquist, 1992). This study highlights the dominance of patriarchal beliefs in certain cases as core factors in determining the fate of a girl child’s educational opportunities.

Describing her ordeal, one dropout (P9) said, “My father and brothers, despite being educated, were always against my education. For them, basic literacy—just being able to read and write—was sufficient for girls. I was eager to study further, but I was never allowed. Now, my classmates are in college, and I feel left out.”

Another girl (P17) who dropped out of school shared, “I passed my Class 10 examination on my first attempt. However, my desire to study further was strongly opposed by my father and my ‘educated’ brothers. For them, a girl is better at home and her education is of no use. This way, my access to education was curtailed, and I felt suppressed.”

A man (P25) shared that girls are naturally

suited for managing household affairs and caregiving, requiring only basic literacy. He said, “Girls should learn basic reading and writing skills but should not pursue higher education. This is because when girls step outside, they tend to become disobedient and difficult to control. Thus, I have stopped my daughter’s schooling.”

Patriarchy can also indirectly contribute to school dropouts by encouraging early marriage among girls. In Kashmir, the custom of early marriage is not commonly observed, except among tribal communities, as the marriage of girls below 18 years of age has been prohibited by the Government of India. However, some girls, examined in this study, had to leave school because of early marriage, either because of their parents or driven by household poverty. In some villages, dominated by patriarchal cultures, girls rarely engaged in paid employment outside their home. Hence, some poor parents arranged their daughters’ marriages to avoid financial difficulties.

A dropout (P13) expressed, “I was in Class 9 when my family thought of fixing my marriage. I wanted to continue my studies and was not ready for marriage at that stage. But I couldn’t go against my family’s decision. Now, I have a child, but I miss my school days. I wish I could rejoin school.”

Another participant (P3) stated, “I was married at the age of 13 while studying in Class 7, which ended my education. Likewise, my sister was married off in Class 9 due to the lack of sufficient resources.”

The Culture of Illiteracy

Parental education is a significant factor influencing children’s educational attainment (Banik and Neogi, 2015). The low level of parental literacy, pessimistic attitude towards education, placing little value to education, insufficient parental involvement in children’s schooling and elder siblings’ history of dropping out (Bridgeland, et al., 2006) significantly increase the likelihood of early school leaving.

The researchers identified households with a long-standing history of illiteracy, where neither parents nor extended family members had received formal education or were even literate. This situation in a household is referred to as the 'culture of illiteracy', which is often associated with academic failure and school dropouts. In such households, continuing education rarely earns appreciation, while dropping out does not result in disapproval. Instead, the education of children, especially that of girls, is seen as having little or no value. They are encouraged to perform household chores or contribute financially to support the family. The elements of positive reinforcement by parents, such as guidance, assistance, observation, motivation and evaluation, which nurture a child's intellect and enables them to perform well at school were found to be absent in such households.

A few participants described the complete lack of educational support within their households, which hindered their schooling. Shahida (P2) shared, "In our kinship group, there was no tradition of education. It was considered to be an activity of little value. No one in my family was educated to motivate, encourage or guide us in studies. Every time I failed to perform the work assigned to me by my teachers and was being scolded or punished at school, I felt humiliated in front of my classmates. The lack of support and unsupportive educational environment also made my siblings dropout just like me. My mother was happy seeing me at home assisting her than at school."

The study further reflected that parental illiteracy and inadequate support led to low educational aspirations or poor academic performance among school-going children. A dropout (P8) shared, "No one in my family even knew the class I was studying in, the location of my school, or whether I had books, uniform and notebooks. This developed a negative attitude in me towards the education of girls. All this was a result of my parents' illiteracy."

A history of elder siblings dropping out—a

common trait in households affected by the 'culture of illiteracy'—often leaves younger children pessimistic or unaware of their educational and career prospects. One dropout (P4) noted, "No one in my family is educated, and those who attended school in the past left without completing it. Here, the focus is on household work, especially decorating the kitchen, rather than preparing to read and write. My illiterate parents never showed any concern for my studies and were happy when I left school early."

Amid the culture of illiteracy, there is an absolute lack of coordination between teachers and parents, which negatively impacts the academic performance of children. A participant (P10) recalled, "My parents, being illiterate, never took my education seriously. They never contacted my teachers to check on my progress and difficulties. Instead, I was trained in household chores so that I could cook well after getting married."

Increased Work

Girls generally perform more domestic chores than boys. However, these activities are often overlooked, undervalued and recognised as unskilled work (Singh and Pattanaik, 2020). The domestic responsibilities performed by rural girls in this study included cleaning, cooking, fetching water and firewood, as well as taking care of younger siblings, other household members and domestic animals. It was found that the participation of school-going girls in these activities served as a major deterrent to their education.

Some of the dropouts mentioned that managing household chores was as much a part of their daily routine as schoolwork. One of the girls who dropped out (P18) said, "I had to clean the kitchen, corridor and other rooms regularly before going to school. Washing utensils and clothes for all family members, taking care of my siblings and domestic animals, apart from performing farm work, was part of my daily routine. How could have I been able to give the best to my

studies? I failed in Class 10 examination and had to quit school.”

“I, along with my mother, actively perform agricultural work. In our area, we take on both men’s tasks as agricultural labourers and women’s responsibilities as homemakers and caregivers. As a result, I often missed my classes and struggled to study,” shared another participant (P6).

In some households, girls faced a triple burden of work, which had a significant impact on their education. In addition to performing routine household chores and agricultural work, they were required to contribute—either directly or indirectly—to household industries and production units. This disrupted their regular school attendance and made it difficult for them to concentrate on studies.

One of the respondents (P17) expressed, “I had to work on three fronts—agriculture farms, at home and the production unit. I had to prepare and serve food, tea and water to all workers at our saw mill regularly. Sometimes, I even assisted men in loading and unloading trucks and tractors. Despite these challenges, I managed to pass Class 10. But I was not allowed to study beyond that.”

Several other girls who dropped out shared similar experiences.

“I was performing well in my studies. However, after my family set up the saw mill, my workload increased considerably. I had to prepare food for my family, workers and guests who visited our home for business pursuits. My whole day was spent in the kitchen and serving others. At times, I would assist men in loading saw materials and finished boxes into the vehicles. Moreover, I had to assist my family in agricultural work. This triple burden of responsibilities eventually forced me to leave school,” shared another girl (P24).

Household Structure

The type of family, number of siblings and birth order play a crucial role in determining

the educational patterns of children. The study found that the type of family, number of children, particularly daughters, and sibling order significantly impact the education of girls. In joint families, decisions regarding the education of girls are often influenced by the opinions of extended family members. Girls in such families usually perform multiple tasks, including domestic chores, agricultural work and caregiving. Additionally, they may become victims of envy and hostility, further restricting their access to education.

One dropout (P1) stated, “Once, my aunt visited my school and handed me a big samavaar (a traditional copper flask of Kashmir) filled with tea. She asked me to carry it to the paddy field and serve tea to the workers there. I felt embarrassed in front of my classmates. I couldn’t help but wonder why she came to my school instead of going directly to the field herself. On many occasions, both my mother and I have felt the hostility of my aunts and cousins towards my education. So, eventually, I decided to quit.”

Birth order and the number of siblings have a significant impact on grade enrolment (Abuya, et al., 2014). Younger children in extended families are more likely to remain in school (Buchman and Hannum, 2001), as older siblings often take on household responsibilities or contribute to the family income. The study found that being the eldest and the only daughter among siblings has a detrimental effect on girls’ education.

A dropout (P13) recounted, “I am the only sister among six siblings. Our family is large, and my mother alone struggled to take care of everyone. To help her, I would often skip school. After completing Class 9, I had to devote myself entirely to household responsibilities.”

Many other girls who left school midway shared similar experiences.

“Being the eldest and the only daughter among my siblings, a major portion of my time was spent on household activities, agricultural work and taking care of younger siblings. I hardly got time to study, which

affected my academic performance and ultimately led to my dropping out of school,” shared another respondent (P6).

Single-parent households and orphans have fewer opportunities to study than those with both parents present (Abuya, et al., 2014). Such households face acute financial constraints, which may negatively impact the academic performance of children (Guo and Harris, 2000) and their willingness to continue their studies. Children, living with a single parent, are usually poor and face a greater likelihood of dropping out (Hunter and May, 2003). This study confirmed that, in many cases, the death of a parent, particularly father, forced children to work in order to supplement the family income.

A dropout (P7) lamented, “My mother alone couldn’t bear the financial burden of my education. Instead, I felt the need to join her in agricultural work to contribute to the family income. Losing my father shattered my will to study.”

Another respondent (P23) shared a similar experience, “After my father’s death, my mother took on all household responsibilities. However, after some time, she too passed away. Although my family owned plenty of land, my sister’s husband, who lived with us, barely cared for it. So, my sister and I had to step in and take over our father’s role in agriculture. This had a major impact on my education.”

Safety Concern for Daughters

Both the availability and quality of educational facilities are important, particularly for children to seek enrolment in schools. The distance to schools significantly affects girls’ enrolment, largely due to parental concerns about their safety, which become more pronounced as they reach puberty (Huisman and Smits, 2013). The findings of the study revealed that factors, such as the distance to schools, coeducation and the early physical maturity of daughters heightened concerns among certain household members, ultimately leading to the discontinuation of their schooling.

A respondent (P27) shared, “In high school, my sister’s physique made her appear like a college student. She often felt uncomfortable in class and on her way to school. Our entire family was worried about her safety, so we suggested her to quit.”

Another respondent (P8) recalled a somewhat similar experience. She said, “Because of my physique, I looked older than my classmates. This made my parents, who are illiterate, uncomfortable. They insisted that I stay at home rather than go to school.”

Some people considered it unsafe for their daughters to continue schooling due to coeducation and the distance of schools from their villages. A participant (P30) admitted, “Nowadays, the environment outside is not safe. So, it is better to educate girls only up to Class 9 or 10. Sending my sister to a higher secondary school located far from our home and offering coeducation is dangerous. To ensure her safety, I decided to keep her at home.”

Another respondent (P25) recounted, “I never wanted to send my daughter to a higher secondary school, which was 8 km from our village. I chose to keep her at home to protect her modesty and dignity.”

Family Health Issues

Health problems not only affect the person who is ill but also other family members as well (Moffat and Redmond, 2017). When parents fall ill, children often take on greater household responsibilities and actively engage in caregiving. The findings of the study revealed that the health and well-being of family members had a significant impact on the education of girls in several households. In the study areas, the responsibility of taking care of the disabled, sick and ailing family members was found to rest primarily on daughters.

One of the dropouts (P15) shared, “Both my parents are handicapped. My father, who is a teacher, used to go to his school with the help of a stick. My mother stayed at home but was unable to manage household

chores properly. I often had to assist her, while taking care of my aged and ailing grandmother. As a result, I got very little time to study, which significantly affected my academic performance.”

Several girls shared similar experiences. Another girl (P4) recounted, “In our family, girls’ education is not considered important. After I passed Class 8, the health of my parents deteriorated. I had to take care of them, while also managing household chores. This brought my schooling to an end.”

At times, health issues can push poorer households further into marginalisation, negatively affecting the education of children. A dropout (P3) shared, “My father, a driver by profession, wasted his earnings on smoking and drinking. Additionally, my mother’s severe health issues worsened our family’s financial condition. As a result, my sister and I were unable to continue our studies.”

Household Conflicts

Children who witness violence in the family experience emotional distress, along with physical and psychological barriers to learning (Lloyd, 2018). The study found that intra-family conflict leaves children feeling upset, guilty, anxious and hopeless, often leading to behavioural issues that disrupt their education. Negative occurrences in the family make children reluctant to attend school, ultimately resulting in dropouts.

A dropout (P23) explained, “My sister and her husband lived with us. Clashes, verbal abuse and fights were frequent between them. Sometimes, their disputes remained unresolved for months, disrupting the peace of our home. I felt distraught, worried, anxious and hopeless, which made it difficult for me to concentrate on studies. I even felt embarrassed among my peers and rarely attended school.”

Recalling similar experience, another dropout (P22) shared, “My father lives with my mother’s family, and often quarrels with us. Sometimes, he would leave the home for months. So, I always experienced a hostile

environment at home and failed to perform well in studies.”

Parental Imprisonment

Children of prisoners, who are also called the ‘forgotten victims of crime’, continue to be a vulnerable group (Murray, et. al., 2009), facing severe socioeconomic, psychological and educational disadvantages. They not only face a stressful life, but also experience difficult living conditions and social stigma.

A girl (P19) whose father and brother were imprisoned, shared, “I couldn’t escape the stress ever since they were imprisoned. My mother often had to visit them in jail and attend court hearings. My younger sisters continued their schooling, while I had to manage all household chores, leaving me with little time to study. So, I failed to perform well in studies. I also felt stigmatised at school.”

The imprisonment of a man, particularly when he is the sole breadwinner, often pushes the remaining family members into a cycle of poverty, trauma and severe educational disadvantage.

A respondent (P11) shared, “After my father got imprisoned, there was no earning member in the family. My younger brother had to drop out of school and join the labour force to sustain the family. But he could barely make ends meet. Later, my father was sentenced to life imprisonment, plunging our family into deep despair and financial crisis. With no hope left, I saw no reason to continue my studies.”

Another respondent (P28) recounted, “During my imprisonment, I was unable to provide for my family. My daughter often ran out of books, uniform and stationery, which discouraged her from continuing her studies. Eventually, I told my wife to discourage her from going to school.”

Study Limitations

This study highlights the issue of school dropout among girls. However, it is important

to acknowledge its limitations, such as the relatively small sample size, the exclusive focus on rural Muslim girls and household factors, which limit the generalisation of its findings. Future research could incorporate a larger sample, including individuals from urban areas and diverse ethno-religious backgrounds to increase the reliability of the results. Additionally, future studies could consider the role of individual and school-related factors in school dropouts.

Conclusion and Implications

The research identified multiple interrelated household factors contributing to girls' school dropouts, including gender discrimination, parental bias in educational investment and negative attitude towards girls' education. Poverty, patriarchy and a culture of illiteracy also significantly restricted girls' access to and completion of education. The triple burden of domestic chores, agricultural work and production tasks placed on some

girls severely impacted their academic performance, ultimately leading to dropout. Additionally, household structures, such as joint family systems, sibling count, birth order and parental safety concerns, contributed to school discontinuation. Family illnesses, intra-family conflicts and parental imprisonment were also reported as causes of dropout.

The findings have practical implications for promoting educational equity. Policymakers and educators should raise awareness about the importance of girls' education, especially in rural areas, through public workshops and media campaigns. Scholarships should be awarded to girls from economically disadvantaged families to address poverty as a key risk factor. Moreover, counseling services should be provided to dropouts and their guardians to encourage school re-entry. School authorities should also prioritize supporting students from illiterate households to address parental ignorance as a factor contributing to dropout.

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Empowering Education in India: Rethinking Access to Equity and Inclusivity through the Samagra Shiksha Abhiyan

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The Samagra Shiksha Abhiyan (SSA), evolving into the Samagra Shiksha scheme, marks a significant government initiative to enhance inclusive, quality education across India. This study critically examines its impact on promoting equitable learning opportunities, analyzing literature and government reports to evaluate key areas: infrastructure development, teacher training, and curriculum improvement. These elements are essential for fostering inclusive environments that address diverse learner needs, and supporting India's sustainable development goals by reducing gender, socio-economic, and geographic disparities. Data is primarily drawn from secondary sources, i.e. empirical data as reported in the Lok Sabha sessions. The research identifies both successes and challenges in Samagra Shiksha's inclusive practices. While the scheme has expanded access, persistent gaps in quality and inclusivity remain, largely due to resource allocation, teacher readiness, and community engagement. Overall, Samagra Shiksha is transforming education access nationwide, yet sustained efforts are essential for achieving true educational equity. This study contributes by highlighting achievements, limitations, and pathways for advancing inclusive quality education in India...

Keywords: Samagra Shiksha Abhiyan; Inclusive education; Quality education; Educational equity; Infrastructure development; Sustainable development goals.

"A quality education can transform lives by empowering people and helping overcome poverty, inequality and discrimination. It's also a human right" UNESCO 2021

Introduction

Education is a vital driver of social and economic progress, especially in diverse, rapidly developing nations like India, where providing high-quality, inclusive education is essential yet challenging. Despite numerous policies, India's educational landscape faces considerable barriers, with disparities in access, quality, and resources varying across regions. These challenges disproportionately affect marginalized groups—such as girls, students with disabilities, and socio-economically disadvantaged communities—who lack adequate support to achieve their educational potential. Addressing these disparities is crucial for both individual

empowerment and broader social equity, aligning with sustainable development goals that promote inclusive growth across the country.

In 2018, India introduced the Samagra Shiksha Abhiyan (SSA), an ambitious initiative designed to unify and expand earlier educational schemes, including the Sarva Shiksha Abhiyan, the Rashtriya Madhyamik Shiksha Abhiyan, and various teacher education initiatives. SSA's vision encompasses the educational journey from early childhood through senior secondary levels, creating an equitable and adaptive framework to meet the diverse needs of Indian students. This consolidated approach emphasizes four pillars: infrastructure

development, teacher training, curriculum reform, and digital resources, all aimed at reducing educational disparities and increasing accessibility, especially in rural and underserved areas (Jojo, 2013). By addressing these core areas, SSA seeks to create inclusive learning environments that cater to diverse learner requirements, thereby levelling the educational playing field.

While SSA's goals are ambitious, and its investments substantial, challenges in implementation persist, particularly around resource allocation, infrastructure quality, and regional discrepancies in educational outcomes (Desai & Kulkarni, 2008). This study critically examines SSA's impact on 'educational access, equity, and quality' (Govinda et al, 2017, Tilak, 2018) to understand how effectively it tackles systemic obstacles hindering educational progress in India. Through a focused analysis of SSA's interventions, this paper evaluates whether the initiative has successfully bridged educational gaps and promoted inclusivity. Key areas of investigation include SSA's financial strategies to improve access, the adequacy of teacher training programs, and the adaptability of curricular and digital resources to support a diverse student population (Mishra, 2018).

Aligned with Sustainable Development Goal 4, which emphasizes inclusive and equitable quality education, SSA's framework is essential for India's progress in the global knowledge economy. The relevance of this study is further underscored by the introduction of India's National Education Policy (NEP) 2020, which seeks to reinforce educational inclusivity and quality in ways that harmonize with SSA's objectives. As India aspires to build a knowledge-based economy, comprehensive and inclusive educational policies are indispensable for fostering equitable and far-reaching development (Banerjee, 2014).

Ultimately, this paper aims to critically assess the effectiveness of the Samagra

Shiksha Abhiyan (SSA) in reshaping India's educational landscape, with a focus on identifying both the achievements and limitations of its implementation (Nongbri, 2017). By examining SSA's impact, this examination contributes to the broader objective of creating a more inclusive, responsive, and equitable educational system that aligns with India's commitment to sustainable development. A well-functioning educational system is essential not only for national progress but also for ensuring that all learners, regardless of socioeconomic status, gender, disability, or geographic location, have the opportunity to access quality education and to contribute meaningfully to society. Tilak (2018) argues that the financial allocations to the SSA scheme and its various programmes have suffered from insufficient funding that further restricts efforts to improve educational quality and equity. Against this backdrop, this paper aims to analyse funds to understand SSA's effectiveness.

This paper will address several key questions. First, it investigates how well the SSA has improved educational access, equity, and quality, particularly for marginalized communities that have historically faced barriers in education. Second, the study seeks to determine whether SSA has effectively reduced regional and demographic disparities, analyzing if its interventions have succeeded in bridging gaps in access and resources across India's diverse regions and population groups. Third, the paper evaluates SSA's strategic pillars—namely, infrastructure development, teacher training, curriculum reform, and digital resources—to assess their effectiveness in creating inclusive, high-quality learning environments. These areas of inquiry will provide insights into how SSA's multifaceted approach has influenced educational access and equity, contributing to India's aspirations for a knowledge-based and inclusive economy.

The study uses official reports, primarily answers to questions in the Lok Sabha

sessions. It presents a description of the statistical picture that emerges from the data. It presents the following six kinds of data regarding fund disbursement under SSA schemes: The approval status and spending of government elementary and secondary schools, approved funds for ICT and smart classrooms, library grants to schools under the Samagra Shiksha Scheme, and the distribution of sports equipment to schools across states are all summed up in this report. It also includes a state-by-state breakdown of the Samagra Shiksha Scheme in India and the spending and allocation of funds on ICT labs and smart classrooms. The analysis of the data is presented year-wise or state-wise. An attempt is made to present the critical insights from a close reading of the data.

Section A: Current State of Educational Financing under Samagra Shiksha Schemes in India

The current state of educational financing under the Samagra Shiksha schemes in India reflects a pivotal approach to addressing educational needs comprehensively. Launched in 2018, the Samagra Shiksha Abhiyan (SSA) amalgamates several previous schemes to provide holistic education from preschool to senior secondary levels. This initiative aims to enhance educational quality, ensure equitable access, and foster inclusivity across diverse socio-economic backgrounds.

Table 1: Summary of Government Elementary and Secondary Schools Approval Status and Financial Allocation/Expenditure for Rani Laxmi Bai Aatma Raksha Prashikshan under Samagra Shiksha Scheme in India (2019-2020 to 2022-2023)

Years	Amounts in Lakhs							
	Elementary				Secondary			
	Approvals		Expenditure		Approvals		Expenditure	
	No. of Schools	Financial	No. of Schools	Financial	No. of Schools	Financial	No. of Schools	Financial
2019-2020	180160	15346.26	124287	7684.41	81800	6656.36	42241	3071.11
2020-2021	147784	13300.56	44721	1486.85	81438	7329.42	38300	2120.9
2021-2022	163045	8320.49	36381	1125.52	56869	3337.27	8457	350.34
2022-2023	188005	23106.85	188005	-	83031	9082.63	83031	-

Note: 1: In the year 2021-22, funds were approved only for one month due to the COVID-19 pandemic. Source: Lok Sabha Unstarred Question No. 1208, dated 25.07.2022.

Table 1 shows fluctuating approvals and expenditures for government elementary and secondary schools under the Rani Laxmi Bai Aatma Raksha Prashikshan scheme from 2019 to 2023. Elementary school approvals peaked at 188,005 in 2022-2023, with corresponding expenditures also reaching their highest. Secondary school approvals

saw a marked rise during this period. However, no reported expenditure in 2022-2023 indicates potential issues in fund utilization, underscoring the need to address inefficiencies for Samagra Shiksha's success in advancing inclusive, quality education across India.

Table 2: Summary of Approved Funds for Information and Communication Technology (ICT) and Smart Classrooms under the Samagra Shiksha Scheme in India (2020-2021 to 2022-2023)

(Rs. in Crore)			
Particulars	2020-2021	2021-2022	2022-2023
Information and Communication Technology	704.6	1003.8	988.2
Smart Classrooms	231.8	909.6	787.4

Source: Lok Sabha Unstarred Question No. 3529, dated 08.08.2022.

Table 2 reveals a notable rise in funding for ICT and Smart Classrooms under the Samagra Shiksha Scheme from 2020 to 2023. ICT funding increased from ₹704.6 crore in 2020-2021 to ₹988.2 crore in 2022-2023, while Smart Classroom funding peaked at ₹909.6 crore in 2021-2022, then slightly declined to ₹787.4 crore in 2022-2023. These investments underscore the scheme's commitment to enhancing digital infrastructure, essential for advancing inclusive, quality education across India.

Table 3: Distribution of Library Grants to Schools under the Samagra Shiksha Scheme in India (2019-2020 to 2022-2023)

States/UTs	2019-2020	2020-2021	2021-2022	2022-2023
Andaman & Nicobar Islands	328	328	329	329
Andhra Pradesh	36356	44682	44802	44998
Arunachal Pradesh	3062	2855	2896	2848
Assam	49678	45966	45860	45810
Bihar	72534	72475	72467	75424
Chandigarh	114	114	114	114
Chhattisgarh	48301	48298	48255	48291
Delhi	2735	2732	2713	2697
Dadra and Nagar Haveli and Daman and Diu	402	400	400	397
Goa	838	824	818	812
Gujarat	35046	35035	34946	34805
Haryana	14355	14400	14386	14477
Himachal Pradesh	15399	15368	15334	15328
Jammu & Kashmir	22451	22247	22250	22225
Jharkhand	14219	35447	35349	35331
Karnataka	43153	14945	39543	47959
Kerala	4723	4619	4728	4602
Ladakh	856	845	821	807
Lakshadweep	43	43	43	36

Madhya Pradesh	119518	119106	98883	98634
Maharashtra	64914	64364	65158	65610
Manipur	2977	3023	2829	2831
Meghalaya	7778	7754	7761	7755
Mizoram	2541	2551	2529	2558
Nagaland	2060	1955	1953	1923
Odisha	54953	54503	53036	49960
Puducherry	414	412	412	412
Punjab	18950	19173	19145	19135
Rajasthan	66641	67267	67359	68455
Sikkim	764	769	839	838
Tamil Nadu	9582	37114	37391	37392
Telangana	28803	28646	28449	26306
Tripura	4301	4294	4258	4239
Uttar Pradesh	161190	161261	136943	2359
Uttarakhand	17153	16632	16446	16380
West Bengal	82225	82230	82749	82731
India	1009357	1032677	1012194	884808

Source: Lok Sabha Unstarred Question No. 17, dated 18.07.2022.

Table 3 reveals state-wise fluctuations in the number of schools receiving library grants under the Samagra Shiksha Scheme from 2019 to 2023. States like Andhra Pradesh and Karnataka saw significant increases, reflecting targeted efforts to improve educational resources, while Uttar Pradesh experienced a sharp decline in 2022-2023. Nationally,

the total number of schools receiving grants peaked in 2020-2021 but fell by 2022-2023, indicating shifting priorities and potential challenges in fund distribution. Strengthening library resources remains essential for inclusive quality education, emphasizing the need for consistent support across all states and Union Territories in India.

Table 4: Allocation of Sports Equipment to Schools across States under the Samagra Shiksha Scheme in India (2019-2020 to 2022-2023)

States/UTs	2019-2020	2020-2021	2021-2022	2022-2023
Andaman & Nicobar Islands	328	328	329	329
Andhra Pradesh	25811	44682	44802	44998
Arunachal Pradesh	3062	2855	2896	2848
Assam	50132	45967	45860	45810
Bihar	72534	72475	72467	75424
Chandigarh	311	351	114	114
Chhattisgarh	48339	48299	48255	48292
Delhi	2765	2761	2719	2707
Dadra and Nagar Haveli and Daman and Diu	402	400	400	397
Goa	838	740	818	812
Gujarat	35046	35035	34946	0

Haryana	14355	14400	14386	14477
Himachal Pradesh	15402	15368	15334	15328
Jammu & Kashmir	22451	22315	22250	24758
Jharkhand	30884	35447	35349	15996
Karnataka	43493	10213	9350	47959
Kerala	4723	4618	4728	4602
Ladakh	856	845	821	807
Lakshadweep	43	43	43	36
Madhya Pradesh	119518	119106	98883	98634
Maharashtra	66552	0	65720	65610
Manipur	2977	3023	2829	2831
Meghalaya	2292	7767	7776	7755
Mizoram	2549	2559	2529	2558
Nagaland	2060	1955	1953	1923
Odisha	54953	54503	53036	49960
Puducherry	414	413	412	412
Punjab	19243	19167	19103	19135
Rajasthan	66641	60166	67359	68455
Sikkim	767	769	839	766
Tamil Nadu	1764	37112	37391	37392
Telangana	28803	28646	28449	26306
Tripura	1830	4303	4258	4248
Uttar Pradesh	161030	2235	136884	2359
Uttarakhand	17153	16634	16446	16380
West Bengal	82225	82256	82749	82731
India	1002546	797756	982483	833149

Source: Lok Sabha Unstarred Question No. 17, dated 18.07.2022.

Table 4 presents the state-wise distribution of sports equipment to schools under the Samagra Shiksha Scheme from 2019 to 2023. Andhra Pradesh and Bihar consistently recorded high numbers, emphasizing their commitment to physical education, while Gujarat and Maharashtra reported zero schools in some years, suggesting possible

implementation gaps. The total number of supported schools peaked in 2021-2022 but saw a significant drop by 2022-2023, highlighting inconsistencies. Ensuring sustained and equitable distribution of sports resources is crucial for fostering holistic, inclusive education across all states in India.

Table 5: State-wise Financial Summary of Samagra Shiksha Scheme in India (2020-2021 to 2022-2023 - Up to 21.07.2022)

States/ UTs	(Rs. in Lakh)								
	2020-2021				2021-2022			2022-2023	
	Budget Approved	Central Share Released	Expenditure Incurred by State/UT Including its Share as Reported in PRABANDH Portal	Unspent Balance (Including State Share) as Reported in the PRABANDH Portal	Budget Approved	Central Share Released	Utilization of Funds (Including State Share)	Budget Approved	Central Share Released up to 21. 7.2022
Andaman & Nicobar Islands	5545.59	4037.43	4466.32	1207.89	5637.45	3152.32	3981.31	7162.15	0
Andhra Pradesh	134853.54	86975.09	108556.12	28215.12	134853.54	68301.36	147631.69	164184.2	0
Arunachal Pradesh	44215.86	33964.52	28533.15	9160.97	44215.86	27996.24	37227.28	47018.88	0
Assam	197702.88	159429.09	189295.95	7101.48	197702.88	156156.4	180164.8	240703.28	0
Bihar	382755	282822.81	518977.57	221855.32	382755	340608.45	521636.02	466004.21	0
Chandigarh	9552.71	7115.42	8680.96	1667.84	10024.09	10804.09	9197.53	12422.81	2140.36
Chhattisgarh	88790.33	35068.41	106813.12	60496.16	88790.33	33236.78	112146.81	108102.23	0
Dadra and Nagar Haveli									
and Daman and Diu	6717.8	3493.77	4190.87	764.45	6740.66	2092.45	25427.67	8554.52	0
Delhi	31521.04	14926.44	36788.81	9404.65	31521.05	14588.04	4144.6	37727.38	0
Goa	1861	1788.38	2718.32	808.06	1861	1102.19	2874.14	2265.77	0
Gujarat	104183.92	97632.8	179496.77	31064.94	100974.38	89375.71	181959.6	122936.31	0
Haryana	85755.82	74570.72	122298.83	20315.01	82538.73	51709.18	105383.82	90620.71	0
Himachal Pradesh	58166.16	49230.46	41213.38	28181.26	58166.16	31910.05	47097.56	69488.17	0
Jammu & Kashmir	147213.74	38557.43	118456.76	60962.12	132021.74	87398.83	77090.75	160736.47	0
Jharkhand	90018	86561.21	144324.65	2214.72	90018	85897.13	155085.48	109596.92	0
Karnataka	70761.11	61010.01	88580.17	15452.69	70761.11	47451.63	121523.59	86151.66	0
Kerala	25221.99	23838.59	43630.97	366.77	25221.99	22512.79	44557.1	30707.77	0
Ladakh	10203.97	5806.39	2042.92	7827.62	9999.72	5717.55	2395.54	12108.66	0
Lakshadweep	826.16	254.63	261.64	283.08	573.33	216.15	343.53	786.86	0
Madhya Pradesh	294630.92	246219.48	430851.72	69298.68	294630.92	229279.75	425514.18	358607.45	0
Maharashtra	101370.47	63559.58	100541.69	8188.24	101370.47	69302.88	67536.59	123418.55	0
Manipur	38242.09	32364.84	32954.52	14206.83	37042.52	18250.19	32168.53	45099.28	0
Meghalaya	42339.28	28355.68	40517.59	-188.82	30584.23	27171.38	43476.36	37236.3	0
Mizoram	23310.22	18855.02	18739.32	10260.54	22559.99	17968.14	19574.87	27466.79	0
Nagaland	25624.49	21347.11	17667.02	20133.09	21808.76	13734.16	23804.32	26552.17	0
Odisha	149745.39	130145.67	276836.93	37418.73	145334.43	123807.39	226818.78	176944.67	0
Puducherry	1514	972.44	2326.1	498.39	1514	1397.54	1946.51	1843.3	0
Punjab	57209.85	53143.13	127385.3	66761.14	54353.29	50127.01	97085.11	66175.13	0
Rajasthan	273019.53	225943.67	425873.85	123069.93	273019.53	240582.13	444355.54	330877.36	0
Sikkim	12749.33	6451.72	9115.62	1030.7	12249.29	10012.46	9904.14	14913.51	0
Tamil Nadu	164996.07	162153.74	271492.84	3288.92	164996.07	159882.18	279038.58	197417.85	0
Telangana	88061.36	34807.36	105952.79	16845.36	88061.36	55327.91	95397.23	107214.72	0

Tripura	42642.69	40371.19	31565.04	13948.38	31820.19	22692.81	36168.05	38741.08	0
Uttar Pradesh	553308.53	457185.61	667843.1	324901.89	512311.236	204497.1	463207.76	583123.97	0
Uttarakhand	78773.29	54149.33	58187.33	38786.7	67262.62	32083.6	57072.76	80124.06	0
West Bengal	133877.32	132743.02	191443.12	41275.34	133877.32	130974.48	238380.34	162995.64	0
India	3577281.44	2775852.18	4558621.16	1063698.73	3467173.24	2487318.43	4341318.47	4156030.79	2140.36

Source: Lok Sabha Unstarred Question No. 2125, dated 02.08.2021, Lok Sabha Unstarred Question No. 2872, dated 21.03.2022 & Lok Sabha Unstarred Question No. 2335, dated 01.08.2022.

Table 5 details the state-wise budget, central share released, expenditure, and unspent balances under the Samagra Shiksha Scheme from 2020 to 2023, showing marked variations across states. Bihar and Rajasthan, despite high budgets and expenditures, reported substantial unspent balances, indicating potential fund management challenges. In contrast, states like Andhra Pradesh and Assam

demonstrated efficient fund utilization with minimal unspent amounts. Overall, budget approvals and fund releases significantly increased, reflecting the scheme's intensified focus on enhancing inclusive, quality education. However, the notable unspent balances underscore the need for improved financial planning and resource allocation to ensure more effective implementation.

Table 6: State-wise Financial Allocation and Expenditure on ICT Labs and Smart Classrooms under Samagra Shiksha Scheme in India (2018-2019 to 2021-2022 - as of 31.01.2022)

States/UTs	(Rs. in Crore)									
	Approval						Expenditure			
	2018-2019	2019-2020	2020-2021		2021-2022		2018-2019	2019-2020	2020-2021	
	ICT Lab	ICT Lab	ICT Lab	Smart Class Room1 b	ICT Lab	Smart Class Room1	ICT Lab	ICT Lab	ICT Lab	Smart Class Room1
Andaman & Nicobar Islands	4.7	0.7	2.7	4.1	3	0	1	3.5	3.6	4
Andhra Pradesh	30	48.5	33.1	0	59.3	26.9	0	24.3	0	0
Arunachal Pradesh	2.3	2.1	4.4	0	5.6	0	0	8	0	0
Assam	18.1	40.5	71	0	155	87.4	22	43.3	40.2	0
Bihar	46.2	30.8	11.9	0	0	65.7	0	0	0	0
Chandigarh	1	0.5	0.7	0	0.3	2.1	0.9	0.8	0.7	0
Chhattisgarh	24.2	0	1	63	13.8	70.9	3.3	27.7	0.5	36.7
Daman and Diu & Dadra and Nagar Haveli	0.4	0	0.9	0	2.2	2	0.3	0	0.6	0
Delhi	1.4	0	10	0.9	0	21.5	18.2	10	9.2	0
Goa	0	14.8	0.2	0	0.2	0	0.3	0	0	0
Gujarat	0.3	0	0	43.5	0	104	0	10.8	10.2	0

Haryana	32	22.8	0	36.5	18.3	29	17	0	39.5	29.9
Himachal Pradesh	59.3	0	55.6	0	35.7	39.2	57.1	40	10.3	0
Jammu & Kashmir	49.1	45.3	26.1	0	51.8	12.4	26.7	12.6	56	0
Jharkhand	51	24.4	73.1	0	79.1	12.5	15.2	31.2	25.9	0
Karnataka	15.1	50.8	76.2	0	63.7	0	33.4	0	0	0
Kerala	47.6	12.5	0	0	0	2.8	0	0	0	0
Ladakh	0	0	4.4	0	2.1	0.5	0	0	0	0
Lakshadweep	1.2	0	0.3	0	0.3	0.2	0	0	0	0
Madhya Pradesh	9.7	0	0	0	28.2	16.8	0	0	0	0
Maharashtra	110.7	154.9	35	0	0	21.3	110.7	42.1	34.5	0
Manipur	7.8	12.3	15.6	0	10	7.4	6.5	13.5	23.1	0
Meghalaya	0	2.8	12.4	0	5.7	0	3.3	0.1	5	0
Mizoram	0.9	0	3.3	0	0.8	4.8	0.8	0	2.6	0
Nagaland	0.9	0.5	0	11.4	0	2.7	0.9	0	0.4	0
Odisha	233	98.8	120.2	9.2	43.4	107.3	131.1	148.1	150.1	9.2
Puducherry	4.8	2.5	3.4	0	1.1	2.4	6.7	2.5	4.3	0
Punjab	6.6	0	12.5	0	37.5	68.9	6.6	42.1	19.3	0
Rajasthan	69.1	36.4	42.5	39.9	38.1	66.1	50.8	33.8	48.2	0.1
Sikkim	6.7	4.1	3.6	0	8.9	5.7	2.2	5.9	3.2	0
Tamil Nadu	0	104.3	54.3	0	149.9	20.8	214.4	77.8	53.1	0
Telangana	52.7	40.5	13.5	0	39.1	72.2	26.7	0	70	0
Tripura	0	5.7	4.5	0	22.8	6	0	0	18.4	0
Uttar Pradesh	37.4	1.1	0	50.4	0	13	0	0	0	0
Uttarakhand	0	1.3	12	27.4	34.6	17	0	33	10.3	9.6
West Bengal	0	0	8	0	93.3	47.2	0	0	0	0
India	924.2	759.1	712.6	286.2	1003.8	956.8	756	611.1	639	89.7

Source: Lok Sabha Unstarred Question No. 1908, dated 14.03.2022. Note: 1: Provision for Smart Classrooms introduced in Samagra Shiksha in 2020-2021.

Table 6 highlights the financial allocation and expenditure for ICT labs and smart classrooms under the Samagra Shiksha Scheme from 2018 to 2022, illustrating critical trends in the initiative's push to expand digital education. States such as Andhra Pradesh, Assam, and Tamil Nadu received substantial approvals for ICT labs, reflecting their commitment to strengthening digital infrastructure. However, expenditure often lagged behind approvals, indicating potential implementation barriers;

for instance, Bihar received significant allocations but reported minimal expenditure. In contrast, Odisha and Tamil Nadu exhibited high expenditure rates, suggesting efficient fund utilization. Overall, the data reveals an increased emphasis on digital education, essential for fostering inclusive quality learning in India. Yet, the gap between approvals and actual expenditures signals a need for better fund management and implementation strategies to maximize impact.

Section B: Impact of Educational Financing on Access, Equity, and Practices in Inclusive Education

Educational financing through initiatives like the Samagra Shiksha Abhiyan (SSA) significantly impacts access, equity, and practices in inclusive education across India. Financial allocations under SSA are essential for developing educational infrastructure and resources that foster inclusive learning environments, such as accessible facilities and adaptive materials for students with disabilities. By funding scholarships, transport subsidies, and residential facilities, SSA reduces educational barriers for marginalized communities, expanding access to schooling. Additionally, SSA's equity-focused approach prioritizes underserved regions, ensuring that children across socioeconomic and geographic divides benefit from educational opportunities. In terms of educational practices, SSA drives innovation by supporting teacher training, curriculum adaptations, and technology integration, which enhance teaching quality and address diverse learning needs. This support is crucial for creating an engaging, adaptable curriculum that meets the varied requirements of students across the nation. Accountability and monitoring mechanisms within SSA ensure transparency in fund utilization, allowing for consistent evaluation and improvement of educational outcomes. Collectively, SSA's financial strategies promote an inclusive, equitable education system aligned with global standards and tailored to India's local needs. Through targeted funding, SSA is instrumental in building a resilient, adaptive educational framework, enabling all students, regardless of background, to access quality education and develop their potential.

Section C: Policy Analysis and Recommendations

The Samagra Shiksha Abhiyan (SSA) has been instrumental in promoting inclusive, quality education across India by reducing barriers to access, enhancing equity, and encouraging innovative practices. A policy analysis reveals key insights, accompanied by recommendations for strengthening and sustaining SSA's impact. While SSA's funding has improved infrastructure and teacher development, state-level disparities remain significant. To address these, consistent, equitable funding based on socio-economic indicators is essential, coupled with rigorous monitoring and audit mechanisms to enhance transparency. Additionally, although SSA has introduced digital learning tools and adaptive curricula, scaling and standardization of these practices are crucial. Clear guidelines for educators and partnerships with technology firms could further the reach and effectiveness of inclusive education tools. For marginalized groups in remote and tribal regions, targeted solutions such as mobile schooling units and community learning centres are needed, along with affirmative action policies to support access and retention. Strengthening SSA's real-time monitoring and evaluation through data analytics and regular stakeholder feedback would improve accountability and intervention efficacy. Finally, integrating SSA with national and state education policies, fostering cross-sector collaborations, and ensuring ongoing funding and policy reforms will enhance its impact and sustainability. In sum, these recommendations aim to build on SSA's successes, address ongoing challenges, and cultivate a more inclusive, resilient educational system that can meet India's diverse needs effectively.

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Reflection on Vigyan Pratibha teacher

Raziya Parakkal, Deepa Chari***

Background

Teacher Professional Development (TPD) programmes are designed to shape teachers' understanding of learning content and associated pedagogies in a structured setting. Ideally, TPD programs should be accessible to all teachers. However, due to various practical constraints, particularly in Indian schools, access to quality TPD programmes remains limited. Consequently, teachers receiving these opportunities are perceived as 'agents' responsible for disseminating their learning to fellow teachers. With better access to teacher communities, trained teachers can help expand the impact of TPDs through a cascade model. Moreover, it is interesting to explore how online TPDs can contribute to the anticipated cascading of professional practices. Against this backdrop, this paper discusses one such online TPD, featuring a brief analysis of an exemplar 'electroscope-making' session, and explains the agentic behaviour of a participant teacher, Raziya.

The TPD session discussed here was conducted under Vigyan Pratibha, a teacher capacity-building programme funded by the Department of Atomic Energy and led by the Homi Bhabha Centre for Science Education (HBCSE). The programme aims to provide an interactive space and access to resources and pedagogies for high-school science and mathematics teachers, facilitating their efforts to create a conducive environment for enhanced science and mathematics learning. The programme primarily caters to teachers from Kendriya Vidyalayas, Jawahar Navodaya Vidyalayas, Atomic Energy Commission schools and select state government schools. Vigyan Pratibha TPD

camps are residential in nature, typically lasting 4–5 days and held twice a year, with teachers attending both camps. During these camps, the participants explore unique perspectives to engage with science and mathematics content through specially designed interactive units and receive basic skill training in these subjects.

Vigyan Pratibha Online Discussion and Electroscope-Making Session

During the COVID-19 pandemic, like many other in-service TPD programmes, Vigyan Pratibha TPDs temporarily shifted to an online format. To continue discussions on learning activities and associated pedagogies, Vigyan Pratibha discussion series was organized on an online platform.

Each VPDS session was conducted in two parts, with a three-day gap between them. This structure allowed teachers, like students, to engage in an activity-based challenge, work on the assignments and discuss their insights on the learning activity with fellow teachers in the follow up (second) part. The participation was voluntary and open to all teachers.

The session analysed in this paper involved an in-depth discussion on material selection for the electroscope-making activity. Additionally, it explores the agentic attributes of participating teachers, particularly Raziya (a co-author of the paper), who extended her educational collaboration with the TPD organisers. Raziya's journey serves as an inspiration for teachers seeking professional development opportunities and envisioning the extent of their potential impact.

Why Raziya?

Raziya participated in one of the initial VPDS sessions and went on to attend many sessions during the pandemic. A physics teacher teaching students of Classes 8 to 12 for the past 12 years, she is passionate about science education and has been actively involved in various school activities. Besides, she has mentored students during science exhibitions and other competitions.

Raziya was interviewed by the Vigyan Pratibha programme team as part of the feedback process for VPDS sessions. In her initial reflections, she highlighted how pedagogy discussions were the most engaging aspect of the sessions, drawing teachers like her to continue attending the online TPD sessions. During the interview, Raziya also briefly discussed one of the VPDS sessions on electroscope-making and volunteered to revisit the session proceeding with the team. She remarked, “This (electroscope) session became a triggering point for my extended connections with the VP organising team.”

Following Raziya’s interview, this session was further explored to understand the factors that made her take on the agentic role, as envisioned in the TPD cascade model, and the process through which she did so.

The reminder of this paper provides details about the discussions during the electroscope-making VPDS session from Raziya’s perspective, her extended connections with the TPD team and how her journey serves an exemplar for understanding the widespread impact of TPD.

Session Overview

An electroscope is a device used to detect charge. The electroscope-making activity is developed under the Makers’ Space initiative, another project of HBCSE, and is designed to facilitate participants develop ideation, design thinking and problem-solving through model-making. A core tenet in designing a constructionist learning environment is the

creation of physical entities and engaging in conversations around the making

In the VPDS session, the facilitators tweaked the electroscope-making activity, considering the participating teachers and the overall nature of TPD. Teachers engaged in the electroscope-making activity in the same way as Class 8 or 9 students would in a science project or laboratory, with the freedom to choose materials for design. They worked on designing, building the device and sharing their experiences. Though discussions were impromptu based on the choice of materials selected by teachers, the facilitator intended such interactions to be a key feature of the TPD session. After the hands-on experience, there was an extended discussion focusing on making the activity pedagogically enriching for students in a classroom setting.

In the first session, the facilitator demonstrated different ways to make an electroscope, discussed material selection and explained its functioning. During the interview, Raziya said, “I enjoyed this approach as a participant, but even more as a teacher! I believe that students can also be introduced to concrete physical concepts by designing or constructing a device, observing its working and gradually exploring the governing principle behind it.”

Raziya’s reflections provided a closer review of the recorded session, with key moments identified as interesting nodes from her perspective.

Parsing Material Choices

When probed about the kind of discussions held during the session, Raziya said, “We talked about the materials used in different electroscope models. We also tried to reason why a particular material was selected.”

Raziya recalled how the discussions progressed to deciding materials for the electroscope design. Some participants who had previously made electroscopes shared their material choices, which the facilitator listed as they shared their experiences.

The schematic (Figure 1) shows the list of choices. For the wire, choices included copper or aluminum, while thin aluminum

foil was used for the strips. The deflection of the strips was observed using objects like comb, plastic scale, cushion, nylon hair, etc.

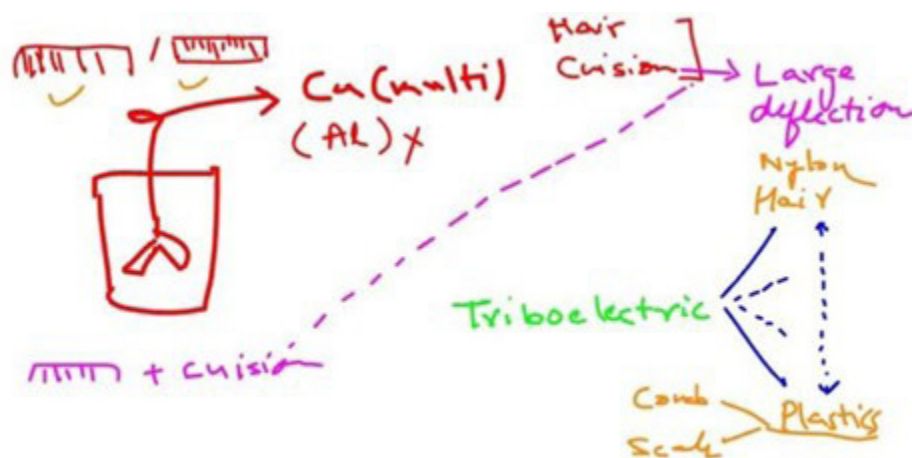


Figure 1: Triboelectric series exercise with identified materials for electroscope construction

Raziya paused when the schematic appeared and highlighted the facilitator's question: "How did you verify it (deflection), sir?" She pointed out that this question was raised when the teachers observed varying degrees of aluminum foil deflection with different materials and combinations. Raziya argued that the question effectively stimulated curiosity and encouraged in-depth reasoning. She added that one of the teachers mentioned about the triboelectric series to explain which combination or material led to maximum deflection. The schematic shows how the facilitator arranged materials like nylon, hair, plastic comb and plastic scale based on the teachers' descriptions of the deflection range, making it easier for fellow participants to follow with a clear visual reference.

During her secondary reflection, Raziya said she could also ask her students questions about materials that can be rubbed against each other to produce frictional charges. She pointed out other probing questions by facilitators, such as:

- "What determines which material should be used to charge the test object?"
- "How to determine the second object?"

- "Why does a particular substance behave this way (easily transferring electrons to another object)?"

Many of these questions were part of procedural discussions that Raziya identified as pedagogically important.

She added that the discussion could help establish a process of arranging materials in a certain order based on their charging tendency. The triboelectric series inherently follows the logic of arranging or ranking a range of materials based on their tendency to gain or lose electrons. Raziya found it engaging to apply this concept to the materials used in electroscope building, exploring how the triboelectric series aids in selecting appropriate materials for generating static charges while designing the model. She felt that the discussion seamlessly connected theoretical concepts with practical applications.

Brainstorming 'On-the-Go' Questions or Situations

Another noteworthy moment Raziya recalled was when a participant teacher, Abby (pseudonym), was explaining the charging process of an electroscope. Abby faced

difficulty in describing the stage where the leaves of the electroscope remained deflected even after the charged object was removed.

While watching the session video, Raziya recalled how her students had struggled to achieve sustained deflection in a pith ball-electroscope model, as described in their science textbook demonstration. She added that she had considered sharing this classroom experience with the fellow teachers during the session. The facilitator picked up Raziya's example for further discussion and suggested a method to reach a stage of in the electroscope charging process where the leaves remain deflected even without the charged object nearby.

"When a charged object is placed near the pith ball, the pith ball deflects. To reach the charged stage, an intermediate step is required where the electroscope is connected to the earth using wires while the charged object in its vicinity. Then, by removing the earthing and the charged object, sustained deflection can be obtained. The facilitator also demonstrated this process with the help of a video."

Raziya selected these examples for reflection, perhaps because she could herself experience the effectiveness of addressing spontaneous questions in a pedagogical context and valued their impact. Like Raziya, it is evident that incorporating such on-the-spot questions can create interesting avenues for teachers to bring some more relevant challenges and situations for discussions. In Raziya's words, "Just as I realised how I could have tackled this practical challenge experienced by my students."

Sharing of Electroscope-making Experiences

During the second session, the teachers were encouraged to discuss their electroscope designs, allowing them to explore intricacies of design and functionality through each other's models. This session was conducted after three days, during which 3–4 teachers, including Raziya, successfully created electroscopes.

Reflecting on the discussions, Raziya mentioned having several interesting conversations about design, material choices and working mechanisms through questions posed by both the participants and facilitators. She recalled, "Just to give an example, a teacher built his electroscope model using a coffee bottle, straw, copper wire, aluminum foil, compact disc and nylon cloth. He used a comb to rub against the nylon cloth to generate charges and shared his observations on the degree of deflection of the aluminum foil when the comb was brought close to the copper wire. He suggested that the deflection was proportional to speed of rubbing."

Raziya interpreted it as an exploration of the relationship between the speed of a moving comb and wire deflections. She also highlighted several passing comments, which may not have been discussed in detail but were significant in the TPD experience. For instance, she shared her initial attempts at electroscope construction using soldering wires, which were unsuccessful, leading her to switch to jumper wires. She discussed that probably the higher resistance of the wire resulted in a lower charge flow from the tip of the wire to the leaves.

She also recalled a query raised by another participant about whether air inside the electroscope or temperature variations affected the deflection of the metal strip in his model. The participants brainstormed possible answers to some queries and discussed what could be interesting to investigate further with students, including the impact of variables like the shape and weight of the deflection strip. After the discussion, Raziya reflected on how students might be interested in exploring material choices for electroscope construction and studying the effects of variables like humidity, temperature, foil shape, model symmetry, etc., on deflection.

The electroscope-making activity required the participants to think critically about diverse material selections. In the context of TPD, this session provided a platform for

considering multiple questions that arise while designing something, helping teachers refine their material choices and enhance their pedagogic preparation. Incorporating maker experiences into science learning enables teachers to place the process of making at the centre of learning, fostering deeper engagement with scientific concepts.

Blogging about the Tinkering

At the end of the first session, the teachers were introduced to the Metastudio open platform, developed for collaborative learning [3]. The objective was to encourage participants to use the platform to create and share blogs about their electroscope designs and tinker or engage in discussions with others beyond session participants.

Raziya presented her electroscope design during the VPDS session and also documented her model-building experience on the Metastudio platform. The Metastudio website features 'Build Your Own Electroscope' blogs, where Raziya's blog is included alongside those of previous participants.

Reflecting on this experience, she noted, "It was interesting to explore this online collaborative space on my own before recommending it to my students. I decided to incorporate the electroscope-making activity into my teaching plan for that year. Despite limited material options during the peak of the pandemic, we managed to carry it out successfully."

Going Beyond the Session in TPD Setup

Shortly after the session, Raziya expressed interest in getting more involved in Vigyan Pratibha activities. The following year, she was awarded a teacher fellowship, enabling her to spend time with the Vigyan Pratibha team and contribute to the planning of new TPD sessions and resource materials. Raziya

continued conducting electroscope sessions with her students at school. Besides, she participated in various Vigyan Pratibha activities discussed in VPDS sessions. She shared these learnings with fellow teachers at her school who could not attend the sessions. Eventually, Raziya became a key team member for organising activities in her school and neighbouring schools. Additionally, she shared her experiences in conferences and forums.

Broad Takeaways

This article serves a dual purpose. Much of the anecdotal evidence discussed was selected by Raziya (the co-author) during reflections and presented by other authors. So, the process of member-checking strongly validates these discussions. The session featured rich discussions, and Raziya's post-facto reflections highlighted the significance of many conversations. Raziya emphasised that these discussions were not only important during the electroscope-making process but also pedagogically relevant for recreating similar experiences for students. In this way, she reestablished the pedagogical strength of the VPDS session.

The COVID-19 pandemic was a challenging period and demonstrated how teachers could continue their professional training and make it more meaningful for themselves and their peers who missed out such opportunities. Teachers participating in TPD should incorporate such reflective exercises more often in their professional practice and encourage other teachers to replicate this experience for students.

Raziya's journey demonstrates how pedagogical discussions and design experiences can be extended to fellow teachers, depicting her agentic attributes. Her ability to leverage these experiences for professional growth serves as an inspiration for other teachers to derive maximum benefits from similar TPD programmes.

Acknowledgement

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Exploring Prospective Teachers' Conceptions in Thermal Physics

Namrata

Abstract

A substantial body of research has documented the prevalence of naïve understandings of scientific concepts among students. These misconceptions can impede learning and persist despite classroom instruction. This study examined the understanding of fundamental thermal concepts, such as heat transfer, specific heat, the relationship between boiling point and pressure, and phase changes, among 170 prospective teachers from various colleges. The data revealed that a significant number of participants held conceptions that deviated from established scientific principles. Additionally, the study identified a variety of reasoning employed by prospective teachers to explain these concepts. Building on these findings, the researcher developed a range of strategies to address the identified alternative conceptions.

Keywords: *Alternative conceptions, thermal physics, heat transfer, specific heat, boiling, phase change, prospective teachers*

Introduction

Students often hold preconceived notions about various concepts and phenomena. It is challenging to address their ideas as they are deeply ingrained. Students develop alternative beliefs through interactions with their physical and social environments, including the use of imprecise language. They conceptualise a concept or phenomenon based on their understanding or previous experiences. It is widely acknowledged that traditional teaching methods that ignore students' pre-existing views are largely ineffective in altering their naïve ideas. According to Wenning(2008), "Students come to school with alternative conceptions that deal with the natural world that are highly resistant to change and strongly influence new learning. These improper interpretations are collectively known as alternative conceptions."

Teachers play a crucial role in shaping the cognitive framework of students. So,

it is imperative for teachers to recognise the alternative conceptions students hold and assist in aligning them with scientific principles. Prospective teachers are in the initial phase of their teaching careers. During this stage, it is essential for them to transition from a learner's perspective to that of a teacher, and reflect on their depth of subject knowledge. This transformation typically takes place while they are engaged in practical teaching sessions. Prospective teachers enter teacher education programmes with their own conceptions, ideas and beliefs, shaped by formal and informal experiences. If prospective teachers carry alternative conceptions, they may inadvertently communicate them to their students. Research findings suggest a strong resemblance between alternative conceptions of prospective teachers and those of their students (Fredreik, et al.,1999).

Concepts related to thermal physics pose significant challenges for both students and educators. At times, prospective teachers

themselves tend to use terms like 'heat' and 'temperature' interchangeably (Kartal, et al., 2011; Sari, 2017; and Keleş et al., 2010). Students found it difficult to relate temperature change with the specific heat of a substance (Niaz, 2000; Kruatong, et al., 2006). Many believe that heating always leads to an increase in temperature (Yeo and Zadnik, 2001; and Chu, et al., 2012). Some students assume that food gets cooked in a pressure cooker due to extra heat generated inside it (Kruatong, et al., 2006).

There is an urgent need for more comprehensive teacher training programmes that emphasise conceptual development alongside pedagogical instruction. The cognitive development of students can be enhanced when educators actively engage in the process of knowledge construction alongside their students.

A structured framework must be in place to facilitate the professional growth of educators (National Curriculum Framework, 2005). Revisions in the teacher preparation curricula are essential to address these concerns. Special attention must be placed on fostering the conceptual understanding of prospective teachers during their course of study. Various theoretical frameworks within the realm of teacher education need to be re-examined and reconstructed (NCFTE, 2009).

Teachers should be well-informed about the preconceptions and misconceptions their students hold. They must be supported in using a variety of teaching-learning strategies to address individual student's understanding ('Constructivist Approaches to Teaching and Learning', NCERT, 2006). If these misconceptions ideas are not adequately countered and challenged through research-based methods by research, they may evolve into persistent alternate conceptions that students carry throughout their education (NCFSE, 2023).

Research Questions

What are the alternative conceptions of prospective teachers in thermal physics?

2. What strategies could be adopted to deal with those alternative conceptions?

Methodology

This article is part of a broader investigation titled *Analysing and Addressing Pre-Service Teachers' Conceptions in Heat and Thermodynamic Phenomena*, which was conducted in five phases—Prior-Interventional, Piloting, Pre-Interventional, Interventional and Post-Interventional. The study aimed to identify the alternative conceptions prevalent among pre-service science teachers, develop research-informed teaching modules and conduct sessions to implement these modules to engage with the alternative conceptions. The study sought to facilitate a transition in pre-service teachers' conceptual understanding, helping them shift from their existing alternative conceptions to scientifically accepted ones. A detailed literature review and informal discussions with pre-service teachers were conducted to explore the causes of these alternative conceptions.

This article elaborates on only the first three phases of the broader study. In the Prior-Interventional Phase, a test was developed after reviewing the literature on students' alternative conceptions in heat and thermodynamics, and making various off-hand observations of pre-service teachers' teaching. The test consisted of 25 questions, including both open and closed-ended questions. The objective was to assess the possible prevalence of alternative ideas among teachers. Some test questions were adapted from standardised, well-known inventories. Experts in the field validated the questionnaire and their suggestions were incorporated.

During the Piloting Phase, the developed test was administered to 30 pre-service science teachers to check its feasibility and effectiveness. Based on the responses received, the questions were analysed and some modifications were made. The final test consisted of 25 questions, primarily

multiple-choice questions (MCQs) along with some open-ended questions. The MCQs included one scientifically correct option (answer), while the other options (distractors) reflected common alternative conceptions identified in the literature and responses received during pilot testing.

In the Pre-Interventional Phase, the final test was administered to a larger sample of 170 pre-service teachers from different colleges in Delhi. These participants were enrolled in a B.Ed. programme and had already obtained a degree in science, having studied physics in their undergraduate courses. The primary objective of the study was to identify pre-service teachers' conceptions about thermal concepts across four domains—heat transfer, specific heat, the relationship between boiling and pressure, and phase change phenomena. From the beginning, it was clarified to the participants that the assessment was solely being conducted for research purposes and would not affect their grades. They were instructed to respond to each question and were encouraged to express their opinions individually if they disagreed with any of the given multiple-choice options.

Based on the responses received through a test, intervention modules were developed to address the identified alternative conceptions. The researcher devised a strategy, in which some teaching interventions were implemented using these developed modules to counter the misconceptions identified alternative ideas. In this study, only an outline of the developed modules was provided. The details of their transaction and implementation procedures are elaborated in the main study, specifically in the interventional and the post-interventional phases.

Discussion on Thermal Concepts

Heat transfer: Heat is the energy that travels from a hotter body to a cooler one. Once energy is transferred, it is no longer considered heat. The change in temperature Δt depends

on the amount of heat transferred (Q), the specific heat of a substance (c), and the mass of the substance (m), and is calculated by the formula $Q = mc\Delta t$.

Specific heat: It is the amount of heat required to raise the temperature of one gram of a substance by one degree Celsius. The change in the temperature of a substance depends on its specific heat. A substance with a lower specific heat will heat up or cool down faster than one with a higher specific heat.

Boiling and its relationship with pressure: Boiling occurs when a liquid is heated to its boiling point and transforms into vapour. The boiling point of a liquid is determined by its temperature, air pressure and vapour pressure. Boiling takes place when the air pressure equals the liquid's vapour pressure. The vapour pressure created by water vapour molecules in bubbles collides with air molecules. Different substances have different boiling points because of variations in their vapour pressures. Lowering the pressure reduces the energy required for a liquid to transition to the gaseous phase, causing it to boil at a lower temperature.

Boiling can be achieved either by increasing the vapour pressure or by decreasing the atmospheric pressure. This paper discusses the boiling of water. Water can boil both below 100 degrees Celsius and above 100 degrees Celsius. At higher altitudes, water boils below 100 degrees Celsius, whereas increasing the pressure causes water to boil above 100 degrees Celsius. Additionally, the temperature of a substance can exceed its boiling point.

Phase change: It is a process in which matter transitions from one state (solid, liquid, gas or plasma) to another. During a phase change, the temperature of a substance remains constant for some time during the change of state, until the transition is complete. During phase change, the heat absorbed or released is used to alter the substance's thermodynamic state or phase.

Findings and Data Analysis

The data were analysed and interpreted. The multiple-choice items were assessed based on the correctness of responses, while subjective items were evaluated qualitatively. The data were also analysed quantitatively using percentage analysis. In a qualitative study, data analysis involves preparing and organising the data, reducing it to certain themes, and finally presenting and comparing it through tables, charts and graphs. The data were categorised into the following four themes based on the identified alternative conceptions of 170 prospective teachers.

Predicting the Final Temperature of the Mixture after Heat Transfer

In this question, the prospective teachers were asked to determine the final temperature of a water mixture after combining two different quantities of water at different temperatures, neglecting the heat transfer during mixing.

This question is based on the concept of heat transfer, represented by the equation $Q = mc\Delta T$ where Q is the heat transfer, m is the mass of the substance, c is the specific heat of the substance and ΔT is the change in temperature of the substance.

As shown in Figure 1, 62% of the prospective teachers correctly predicted that the temperature of the mixture would be between 25 and 50 degrees Celsius. However, after reviewing and analysing their responses, it was found that only a few of these 62% prospective teachers provided the right reasoning by accurately applying the formula $Q = mc\Delta T$ to calculate the final temperature. Some of the incorrect explanations provided by prospective teachers who marked the correct option included the following.

- “The larger volume of water had a higher temperature, so even after mixing with cold water, the temperature won’t drop beyond 25 degrees Celsius.”
- “Energy dissipation will occur due to mixing.”

- “The average temperature of the container is greater than 25 degrees Celsius as the amount of water, which is at 50 degrees Celsius, is 200 gm, while the other is only 100 gm.”

Additionally, some prospective teachers even applied the ideal gas law ($PV = nRT$) in this question to calculate the temperature, which was not appropriate.

These responses indicate that many prospective teachers hold alternative conception, such as believing that after reaching equilibrium, the final temperature is simply the average of two liquids after mixing or that increasing the amount of a substance increases the final temperature.

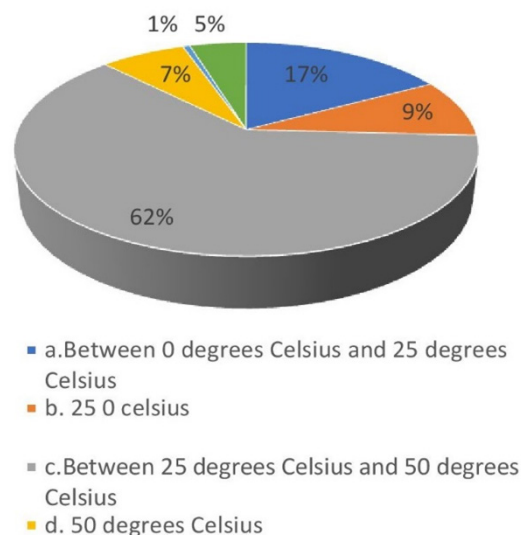


Figure 1: Prospective teachers' responses on predicting the final temperature of the mixture

Prospective Teachers' Understanding about Specific Heat and Temperature

The conceptual knowledge of prospective teachers regarding temperature and its relationship with the specific heat of a substance was assessed through this test question. In this question, a situation was given, in which equal quantities of iron and water were heated by the same source for the

same duration. The prospective teachers were asked to determine which substance would

undergo a greater change in temperature and why.

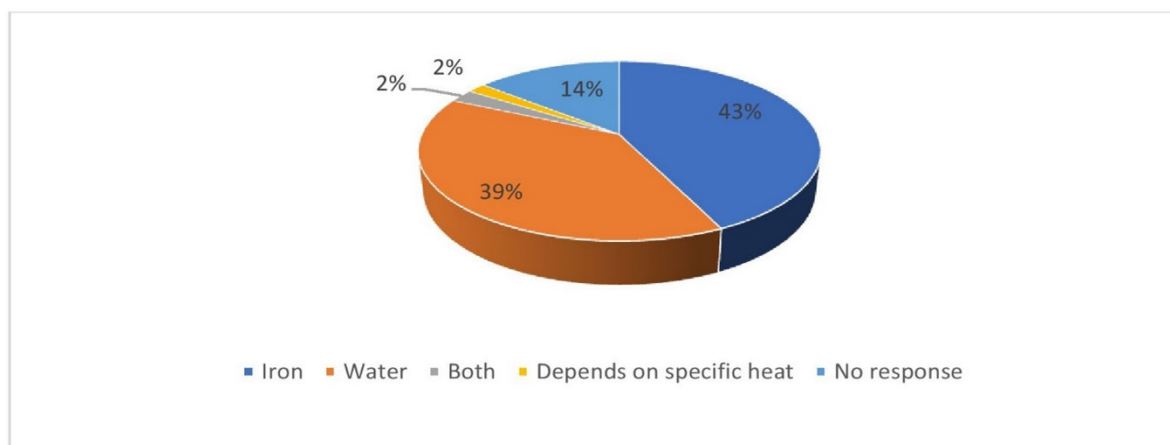


Figure 2: Prospective teachers' responses for selecting iron, or water, or both for undergoing greater change in temperature

As illustrated by their responses in Figure 2, 43% of the prospective teachers correctly stated that iron would undergo a greater change in temperature. However, only 26% provided the correct reason, explaining that iron has a lower specific heat than water, and therefore, it experiences a greater change in temperature.

Some prospective teachers gave incorrect reasons, such as:

- "The change in temperature would be greater in iron because iron is solid, so its particles are tightly packed."
- "Iron is a good conductor; therefore, heat transfer will occur rapidly."

- "Water will undergo a greater change in temperature because, as a liquid, its atoms move freely as compared to iron."

After a qualitative analysis of their responses, the prospective teachers' explanations were categorised into various themes. Their responses indicate that an alternative conception—that for a given amount of heat, there is no relationship between the increase in a substance's temperature and its specific heat. The diverse range of responses, as shown in Table 1(a), Table 1(b), Table 1(c), Table 1(d) and Table 1(e), suggest a weak conceptual understanding of this concept among prospective teachers.

Table 1: Reasons cited by Prospective Teachers for opting substance undergoing Greater Change in Temperature

Iron	
Reasons for Choosing Iron	No. of Prospective Teachers
Iron (no reason)	13
Iron is a good conductor of heat.	18
The specific heat of iron is less than water.	19
Solid particles are tightly packed in iron.	12
Iron has high thermal conductivity.	3

Iron is more effective.	1
Iron stores more heat.	2
Iron will take more time to heat.	2
Iron has high melting and boiling points.	3

Table 1(a): Reasons cited by PT for opting iron for undergoing greater change in temperature

Water	
Reasons for Choosing Water	No. of Prospective Teachers
Water (no reason)	20
Low melting and boiling points	13
Water has High boiling point	1
Liquid state atoms are loosely packed.	12
High internal energy	1
Water takes less time to get heated	1
Water has High calorific value	1
Water starts to evaporate after reaching its boiling point.	4
Water has less specific heat than iron.	1
It has less intermolecular force.	3
Molecules in water move freely.	1
Water has high energy or thermal conductivity	2
Water has low density, so its molecules move fast.	4
Water has High entropy	1
Specific heat of water is more than iron	2

Table 1(b) : Reasons cited by PT for opting water for undergoing greater change in temperature

Reason Given by Prospective Teachers	No. of Prospective Teachers
The change in temperature depends on specific heat.	4

Table 1(c) :Reasons cited by PT for change in temperature

Reason Given by Prospective Teachers	No. of Prospective Teachers
The change in temperature would be same in both iron and water.	3

Table 1(d) :Reasons cited by PT for change in temperature

No Responses given by Prospective Teachers	No. of Prospective Teachers
No responses	23

Table 1(e):PT not responded for this question

Analysing Prospective Teachers' Understanding of Boiling Point and Pressure

A common alternative conception among prospective teachers was that water always boils at 100 degrees Celsius. According to them, water could neither boil below nor above 100 degrees Celsius, as reflected in their responses. Figure 3 shows that only 22% of the prospective teachers correctly stated that increasing pressure raises the boiling point. So, in a pressure cooker, water boils above 100 degrees Celsius due

to increased pressure, allowing food to cook faster. However, 25% of the prospective teachers incorrectly perceived that increasing pressure lowers the boiling point of water. Additionally, 30% cited that increasing pressure generated extra heat. An analysis of their responses reveals misconceptions, such as the belief that water always boils at 100 degrees Celsius under all conditions, that the boiling point is the maximum temperature a substance can reach, that there is no relationship between boiling and pressure, or that extra pressure generates extra heat.

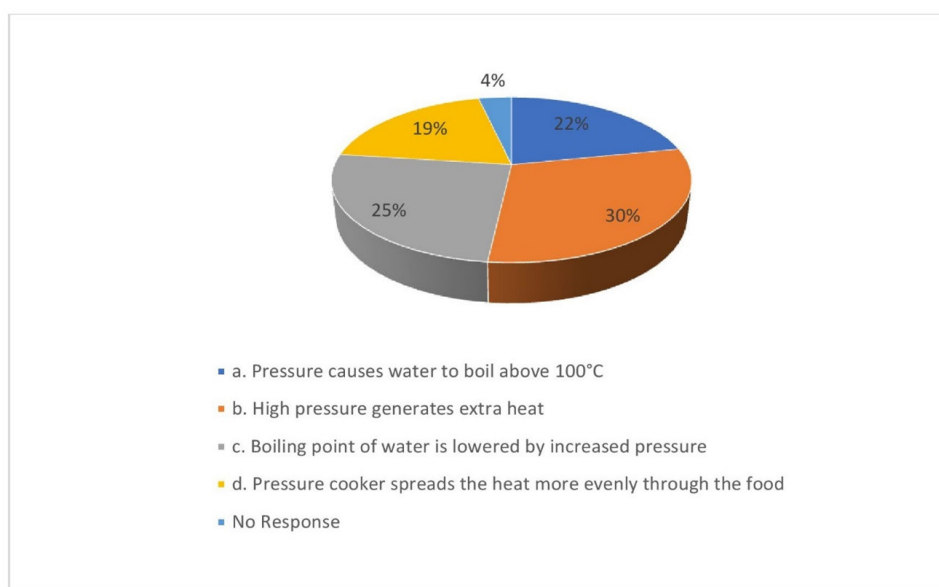


Figure 3: Prospective Teachers' responses for the relationship between boiling point and pressure

Analysing Prospective Teachers' Interpretation of Phase Change

This question assessed the prospective teachers' knowledge of phase change. It was open-ended, requiring them to mention instances where they had observed no change in the temperature of a substance despite heat being supplied. Many responses were recorded, as shown in Figure 4. A total of 15% of the prospective teachers answered correctly, stating that during a phase change or change of state (from solid to

liquid or liquid to gas), the temperature of a substance does not change, i.e., it remains constant. Additionally, 19% correctly mentioned that the temperature of ice does not change during melting, while 6% stated that the temperature remains unchanged during the boiling of water. However, some prospective teachers incorrectly stated that the temperature of materials like metal, paint, wood, glass, oil, insulator, diamond, gold, mercury, railway track, etc., would not change on heating. Moreover, 2% of the prospective teachers held the misconception

that the temperature of a substance always changes when heated. These findings indicate that most prospective teachers

struggled to recall correct instances and lacked understanding of the concept of phase change.

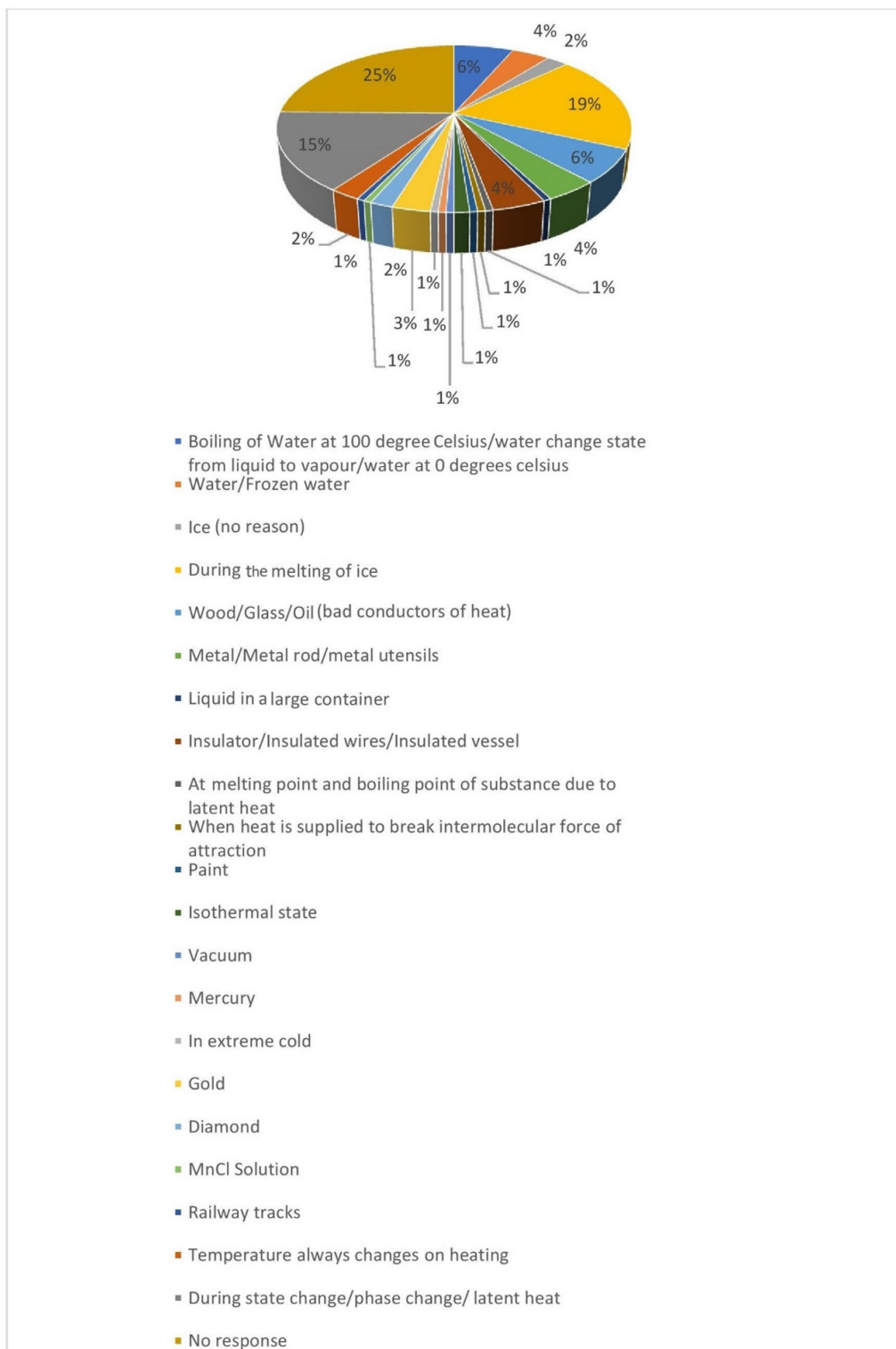


Figure 4: Various substances mentioned by prospective teachers as having constant temperature during phase change

Rationale for Developed Modules to Address Alternative Conceptions

Interventional teaching modules were designed using various instructional strategies, such as the demonstration method, analogy-based teaching, the POE(Predict-Observe-Explain) method, cognitive conflict-based instructions and ICT-based simulations. As established by numerous researches, these strategies have proved effective in bringing about the desired conceptual change among learners.

Research studies have also shown that learning in science can be best done through hands-on experience (Position Paper, NCERT, 2006). Analogy-based teaching has been found to facilitate conceptual change (Haglund and Jeppsson,2014; James and Scharmann,2007; and Vosniadou, et. al,2001). Several studies have also demonstrated that ICT is an effective tool for addressing alternative conceptions (Demirci,2005; Finkelstein, et, al., 2005; and Aslan and Demircioğlu, 2014). The POE strategy has also been found to foster conceptual change (White and Gunstone,1992; Pathare, et al.,2015; and Radovanović and Sliško,2013).

The identified alternative conceptions were addressed through carefully developed interventional learning modules, incorporating real-life, intriguing examples. For instance, to teach the concept of specific heat, it was discussed that if an equal amount of heat is supplied to equal masses of different substances, the resulting temperature change will not be the same. This was further demonstrated in the module through activities and challenging short-answer questions.

For Example, consider Cup A containing 1litre of water and Cup B containing 2litres of water (both the cups are made up of the same material). Initially, water in both the cups was at room temperature. They were then placed on a hot plate and heated until the water in both the cups started boiling

(100°C). The following question was posed to the respondents.

“According to you, in which cup more heat is transferred? Please tick against the appropriate option: Cup A_____ or Cup B_____.”

Engaging demonstrations were also included, such as an activity illustrating the relationship between boiling and pressure. ICT-based simulations and videos further reinforced the concept of specific heat.

Different conceptual change approaches were incorporated in the modules. Alternative conceptions related to heat transfer were addressed through a module that explained the concepts of heat, temperature and heat energy transfer. The module also covered the historical development of the concept of heat, the difference between heat and temperature, and how heat transfer occurs. The amount of heat transferred from one object to another is determined by the heat transfer formula: $Q = mc\Delta T$. Here, ‘Q’ is the heat transferred, ‘m’ is the mass of the substance and ‘ ΔT ’ is the change in temperature. The symbol ‘c’ stands for specific heat, which depends on the material and its phase.

Analogy-based teaching to explain new concepts has been reported as a helpful strategy in related research literature (James and Scharmann,2007). This strategy has been incorporated in the module where the concept of specific heat was compared with the concept of inertia in mechanics: just as inertia resists changes in an object’s state, specific heat resists changes in a substance’s temperature. This analogy was further clarified through a demonstration and an online simulation.

The module included a demonstration where equal amounts of water and mustard oil were heated separately in an electric kettle for the same duration. The resulting changes in temperature were recorded, revealing variations in temperature between the two liquids, thereby illustrating the concept of specific heat. Additionally, prospective teachers engaged in an online simulation using

the Java Lab application, where they compared a substance with low specific

heat to one with high specific heat, as shown in Figure 5.

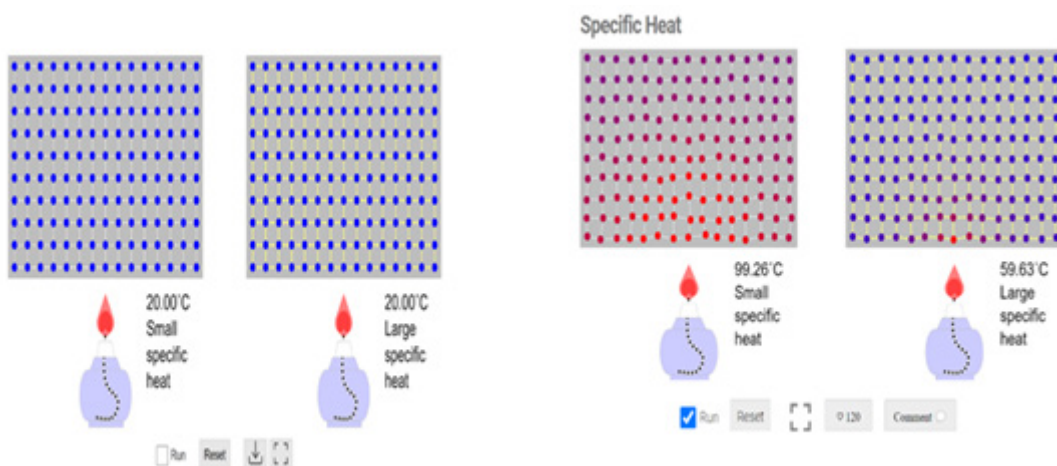


Figure 5: ICT simulation to demonstrate a substance undergoing change in temperature with large specific heat and small specific heat

The concept of boiling point and the relationship between boiling and pressure were explained through a demonstration. To illustrate this concept, a module was designed to demonstrate that water can boil below 100 degrees Celsius, as shown in Figure 6. Boiling occurs when the atmospheric pressure equals the vapour

pressure of the liquid. In the demonstration, a syringe was half-filled with water, and air bubbles were removed by pressing the piston. Then, the mouth of the syringe was sealed, and the piston was pulled outward to reduce the pressure inside. As a result, the water began to boil below 100 degrees Celsius. This demonstration caused cognitive conflict among the prospective teachers, who previously believed that water boils only at 100 degrees Celsius.

Heating a substance does not always lead to a rise in its temperature. Therefore, the concept of phase change was validated through an activity. The POE strategy was employed in this module to explain the phase change concept. Prospective Teachers were instructed to constantly watch and record the temperature while the given amount of water was being heated. Before the experiment, they were asked to predict how the temperature would change during the heating process. They were asked to continually observe and note down the temperature as the water was heated. The results of the activity differed from the predictions made by some Prospective Teachers. The contradictions were subsequently explained.



Figure 6: Demonstration of boiling of water below 100 degrees Celsius by reducing pressure

Conclusion

After collecting and analysing the data, it can be inferred that prospective teachers held alternative conceptions of various concepts in thermal physics. The prevalence of alternative conceptions or misconceptions may be attributed to several factors. Presumed ideas, metaphors, language barriers, conceptual difficulties and teacher-driven approaches are among the predominant causes for the formation of alternative conceptions (Pathare and Pradhan, 2010). Additionally, plain definitions without proper explanations in textbooks often cause confusion among students (Sözbilir, 2003). Ambiguous terminology and confusing symbols given in the textbooks further contribute to the strengthening of alternative conceptions (Bauman, 1992). As a result, prospective teachers lacked a comprehensive understanding of certain concepts.

This study highlights the need for innovative teaching strategies to address these alternative conceptions or misconceptions. Various strategies, including analogy-based teaching strategy, POE strategy, ICT-based simulations, demonstrations and cognitive conflict statements, were employed. The developed modules proved to be effective in addressing the alternative conceptions held by prospective teachers, as established in the larger part of this study.

Alternative Conceptions Identified from This Research

- After reaching equilibrium, the final temperature is the average of the two mixed liquids, or it increases with the amount of substance.
- For a given amount of heat provided, there is no relationship between the increase in a substance's temperature and its specific heat.
- Water boils only at 100 degrees Celsius under all conditions, or the boiling point is the maximum temperature a substance can reach, or there is no relationship

between boiling and pressure, or extra pressure generates extra heat.

- Heating always results in increasing the temperature of a substance.

Questions of the Test

1. Cup A contains 100 grams of water at 0 degrees Celsius and Cup B contains 200 grams of water at 50 degrees Celsius. The contents of the two cups are mixed in an insulated container (no heat transfer occurs during mixing). When the mixture reaches thermal equilibrium, what is the final temperature of the water in the container? Give reason for your answer.
 - (a) Between 00C and 250C
 - (b) 250C
 - (c) Between 250C and 500C
 - (d) 500C
 - (e) Higher than 500C

Reason for your answer: _____

2. If the same quantity of water and iron are heated by the same source and for the same duration, then which substance will undergo a greater change in temperature? Why?
3. Food cooks faster in a pressure cooker than a normal saucepan. What could be the possible reason for this?
 - (a) Pressure causes water to boil above 100°C.
 - (b) High pressure generates extra heat.
 - (c) The boiling point of water is lowered by increased pressure.
 - (d) Pressure cooker spreads the heat more evenly through the food.

If you think of any other reason please write.

4. Can you think of instance, in which the temperature of an object/substance does not change despite heating it for some time?

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An Investigation into Teacher Trainees' Attitude towards Personal Values

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Abstract

Teaching is the foundation of all professions, with educators playing a crucial role in shaping young minds and instilling values that go beyond academic knowledge. Central to teaching are four fundamental values—dignity, truthfulness, fairness and responsibility. These core values greatly influence teachers' aspirations and behaviour. For aspiring educators, it is crucial to understand how teacher trainees perceive these personal values. This study seeks to explore these attitudes among teacher trainees.

Keywords: Personal Value, Attitude

Introduction

Teachers are vital to societal progress, shaping the educational system and, in turn, the future of a nation. The National Education Policy 2020

(NEP 2020) highlights the critical role teachers play in guiding students towards their goals, thereby contributing to national progress. Mahatma Gandhi viewed education as a process of holistic development, while Swami Vivekananda saw it as a means for character development and idea integration. Teachers are entrusted with the responsibility of shaping well-rounded individuals who will become the future leaders of the country.

Value education plays a crucial role in creating a tolerant, humane and ethically sound society. Without a strong values framework, knowledge alone could lead to adverse social effects. Value education is integral to the learning process, influencing how individuals think, feel and act towards leading a fulfilling life. This study aims to explore teacher trainees' attitude towards personal values.

Review of Related Literature

Previous research studies have explored various facets of teachers' values. Sandhya (1999) identified that theoretical, social and economic values were given more importance than political, aesthetic and moral values among teachers. Urban teachers displayed higher moral and economic values compared to their rural counterparts. Bar and Singh (2004) discovered that female teacher trainees valued aesthetics more highly, while males prioritised hedonistic and power values. Urban trainees showed higher economic values compared to rural trainees, who placed greater importance on family prestige. Nique (2010) noted that value classifications vary across professions.

Importance of the Study

The Kothari Commission's statement, "The destiny of India is being shaped in her classrooms," underscores the profound impact teachers have on the nation's future. Teachers with strong personal values can impart these to their students, promoting

both academic and personal excellence. Value education fosters social cohesion and national unity, contributing to societal transformation and creating a positive learning environment. This study aims to assess teacher trainees' attitude towards personal values, which are critical for developing future educators.

Objectives of the Study

The study aims to:

1. evaluate the level of teacher trainees' attitude towards personal values.
2. compare the attitude of male and female teacher trainees towards personal values.
3. compare the attitude of science and general stream teacher trainees.
4. compare the attitude of trainees with regard to educational qualifications of their parents

Hypotheses of the Study

The study proposed the following null hypotheses.

H01: There is no significant difference in personal value scores between male and female teacher trainees.

H02: There is no significant difference in personal value scores between science and general stream teacher trainees.

H03: There is no significant difference in personal value scores between trainees having qualified and unqualified parents.

Limitations and Delimitations of the Study

Limitations: The study utilised a tool developed by G. P. Sherry and R. P. Verma from the National Psychological Corporation, Agra, which may have inherent limitations.

Delimitations: The study focused exclusively on teacher trainees from B.Ed colleges in Gujarat and focused mainly on personal values.

Variables of the Study

The study examined the following variables.

1. Dependent Variable: Personal Values
2. Independent Variables:
 - (a) Gender (male, female)
 - (b) Stream (science, general)
 - (c) Parental Qualification (qualified, unqualified)

Personal value has been defined:

'Personal values' refer to the attributes and behaviour that individuals consider important, which guide their decisions and actions.

Adler (1956) describes personal values as either socially or personally preferred, enriching and practiced individually. Shetty, et al., (2000) define personal values as those cherished by individuals regardless of social relationships. Richardson(2005) view them as enduring constructs that shape an individual's personality. The study considered 10 personal values—religious, social, democratic, aesthetic, economic, knowledge, hedonistic, power, family prestige and health.

Research Method

This survey-based research employed a standardised tool to assess the attitude of teacher trainees towards personal values. The sample consisted of 152 teacher trainees from four B.Ed colleges in Gujarat. The data was collected and analysed.

Data Analysis

Objective 1: To assess the level of teacher trainees' attitude towards personal values

The data revealed the following.

- Lower mean score: 20.88
- Average mean score: 23.96
- Higher mean score: 25.03

These results indicate a range of personal value levels among trainee teachers.

Objective 2: H01 Data Analysis

Gender	Mean	N	SD	Df	SE. d.	t	Remark
Male	22.666	12	2.3094	150	0.261	2.61	Significant at 0.01 level
Female	23.833	140	0.3892				

Here SE d means standard error of the difference

The null hypothesis was tested using Critical Ratio. The analysis showed the following.

- Mean for males: 22.67
- Mean for females: 23.83
- The computed t-value of 2.61 was significant at 0.01 level, indicating that females have higher personal values than males.

Objective 3: H02 Data Analysis

Stream	Mean	N	SD	Df	SE d	t	Remark
Science	23.33	28	0.984732	150	0.077	8.58	Significant at 0.01 level
General	22.66	124	2.309401				

Here SE d means standard error of the difference

The comparison of science and general stream trainees revealed the following.

- Mean for science stream: 23.33
- Mean for general stream: 22.66
- The calculated t-value of 8.58 was significant at 0.01 level, showing that science stream teacher trainees possessed higher personal values compared to general stream teacher trainees.

Objective 4: H03 Data Analysis

Qualification	Mean	N	SD	Df	SE d	t	Remark
Qualified	19.08	50	5.53	150	0.66	5.50	Significant at 0.01 level
Unqualified	22.75	102	2.34				

Here SE d means standard error of the difference

The comparison of teacher trainees on the basis of parental qualification revealed the following.

- Mean for qualified parents: 19.08
- Mean for unqualified parents: 22.75
- The t-value of 5.50 was significant at 0.01 level, indicating that teacher trainees having unqualified parents possessed higher personal values than those having qualified parents.
- 2. Female teacher trainees possessed higher personal values than their male counterparts.
- 3. Science stream trainees exhibited higher personal values as compared to those from the general stream.
- 4. Teacher trainees having unqualified parents possessed higher personal values than those having qualified parents.

Major Findings

1. Personal values among teacher trainees varied: high for those above the 66th percentile, average for those between 33rd to 66th percentile and low for those below the 33rd percentile.

Conclusion

Understanding and embodying personal values is essential for teachers to effectively impart them to their students. This study highlights the significance of teacher trainees recognising and cultivating their personal values.

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Teachers' Insights: Exploring In-Service Teacher Education in Select Districts of Punjab

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Abstract

Teachers form the backbone of the education system, and their continuous professional development is crucial for improving student outcomes. The Government of India (GoI) has placed significant emphasis on enhancing teachers' capacity to deliver and improve learning outcomes, apart from focusing on other parameters for imparting quality education. The government of Punjab has taken proactive steps to improve professional development opportunities for teachers. This study examines the state government's perception of government middle school teachers from two districts—SAS Nagar and Ferozepur—regarding the quality and effectiveness of in-service training imparted to teachers by the State Council of Educational Research and Training (SCERT), Punjab. The findings provide valuable insights into the effectiveness, relevance and impact of SCERT's initiatives. Additionally, the research identifies the challenges faced by teachers and head teachers in implementing these training programs and provides policy recommendations to enhance the overall quality of teacher education in the State. While the Punjab government has taken commendable steps to enhance teacher development, addressing challenges related to quality and accountability is essential to maximise the impact of these training programs.

Keywords: In-service teacher education, teacher training, SCERT, Punjab, teachers' insights

Introduction

India has made significant progress since the enactment of the Right of Children to Free and Compulsory Education (RTE) Act, 2009 and the launch of the SarvaShikshaAbhiyan in 2001-02. These initiatives have led to improvements in access, equity and quality of elementary education across the country. Additionally, the number of out-of-school children and dropout rates have also reduced significantly, though some concerns persist. Challenges, such as teacher shortage and poor quality of teaching continue to impact learning outcomes in classrooms.

A teacher plays a crucial role in classroom transactions, impacting the learning outcomes of students. The Government of India (GoI) has placed significant emphasis on strengthening teachers' capacity to

improve learning outcomes. To achieve this, a number of teacher education programmes have been introduced to build teachers' capacity. In 2019-20, the Department of School Education and Literacy, Ministry of Education, GoI, launched a national mission to improve learning outcomes through an Integrated Teacher Training Programme (ITTP) called National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA) under the centrally-sponsored Samagra Shiksha Scheme. The ITTP's primary objective is to impart training to teachers at all levels of school education in a creative and effective manner, equipping them to foster critical thinking in students, manage diverse classroom situations and act as first-level counselors. NISHTHA focuses on enhancing teachers' skills in key areas, such as learning outcomes, competency-based

learning and assessment, learner-centered pedagogy, school safety and security, personal and social development, inclusive education, information and communication technology, and health and well-being.

Initially, face-to-face training sessions were conducted in various states, reaching a large number of teachers and school heads. However, the COVID-19 pandemic disrupted these efforts, leading to the launch of online NISHTHA courses through the Digital Infrastructure for Knowledge Sharing (DIKSHA) platform—a national portal that provides access to digital resources for teachers and students.

The government of Punjab, in line with the Central government's teacher education initiatives, launched the Padho Punjab Padhao Punjab programme to improve the quality of education in the State. The State Council of Educational Research and Training (SCERT) and District Institutes of Education and Training (DIETs) are two key institutions set up in all states of India, including Punjab, to improve the quality of education and teacher training at the state and district levels. The SCERTs serve as the nodal agencies responsible for planning and organising teacher training programmes, whereas DIETs play a vital role in conducting action research and field studies to identify local educational challenges. In Punjab, these institutions are crucial for the continuous in-service training of teachers, curriculum innovation and implementation of education policies. The training provided are part of a broader, ongoing professional development initiative, commonly referred to in literature as 'teacher education'.

Punjab has implemented a cascade model of training, where in various training activities and interventions were undertaken to achieve the broader objective of teacher education. Under this model, a State Resource Group (SRG), comprising trainers for various subjects, received training from national-level research and training organisations like the National Council of Education Research and Training (NCERT)

and the National Institute of Education Planning and Administration (NIEPA). The training programmes for the SRG was conducted in phases, primarily focusing on developing subject-specific training modules, content, pedagogy, teacher training on child development, creation of learning material, preparation of weekly teaching planners and improving the classroom environment. The SRG, in turn, trained District Resource Persons (DRPs), who further trained Block Resource Persons (BRPs). As master trainers or teacher-mentors, the BRPs were primarily responsible for providing academic support to teachers in schools. This structure ensured that subject-specific expertise was effectively passed down to teachers at the grassroots level, enabling them to address challenges in real time. The COVID-19 pandemic prompted a shift towards online teacher education methods (The Times of India, 16 December 2020), with the State adopting technology-driven training approaches, utilizing digital platforms like Zoom and Cisco Webex. Additionally, Punjab launched the Ghar Baithe Sikhya programme through various Direct to Home (DTH) channels to facilitate remote learning.

Review of the Literature

Numerous studies conducted across the states of Haryana (Saini, 2017), Punjab (Kaur, 2016, and Garg, 2012), Assam (Kalita, 2004), Kerala and Tamil Nadu (Pillai, 2018), Himachal Pradesh (Anand, 2011, and Kumar, 2011), and Karnataka (Pattanshetti, 2012) have highlighted the importance of in-service teacher training in bringing about qualitative improvement in school education. Additionally, teacher education positively impacts classroom transaction, knowledge and motivation (Omar, 2014, and Kidwai, et al., 2013). Nevertheless, the effectiveness and significance of these teacher education programmes and policies largely depend on the ability to translate the 'what' of educational content into the 'how' of classroom learning. Without this crucial transition, no significant improvement in education can be brought

about (Mohan, 2021). Several studies (Azim Premji Foundation, 2010; Bordia, 2019; Dhawan, 2003; Kidwai, et al., 2013, and Mohanty, 2013) emphasize the critical role of SCERTs and DIETs in implementing teacher education programmes that cater to the evolving needs of teachers in an ever-changing educational landscape. However, teachers have reported facing certain challenges in training programmes, including excessive workload, time constraints and a perceived lack of relevance in some training modules (Kaur, 2016, and Garg, 2012).

Need for the Study

Teachers' insights can lead to targeted improvements in teacher education programmes by addressing workload issues, promoting technology integration and ensuring the practical application of training. This study aims to contribute to more effective professional development, ultimately enhancing teaching practices and improving student outcomes in Punjab. The study is significant as it seeks to assess the nature and effectiveness of in-service teacher training in SAS Nagar (Mohali) and Ferozepur districts, while also identifying the existing inequities. These districts were selected on the basis of their performance in the National Achievement Survey (GoI, 2017). Despite being located on the international

border with Pakistan, Ferozepur performed above average in the quality of education at the pre-primary, primary and middle levels. In contrast, SAS Nagar, situated on the outskirts of Chandigarh, has recorded below-average performance.

Objectives and Methodology

This empirical study aimed to explore and assess the perception of government middle school teachers from SAS Nagar and Ferozepur districts regarding the quality and effectiveness of in-service teacher education provided by SCERT, Punjab. The study examined various aspects, including the nature of training imparted, training content, quality of trainers, follow-up mechanisms, and challenges faced by head teachers/principals and teachers during their time away for training. It also sought to identify factors influencing teachers' perception, such as content relevance, delivery methodology and motivation, while suggesting improvements in these areas.

Sampling: Using a multi-stage stratified random sampling method, two districts—SAS Nagar and Ferozepur—were selected. A total of 110 government middle school teachers from these districts, representing all blocks, were chosen for the study (Table 1). Additionally, head teachers and principals of the selected schools were interviewed.

Table 1: Sample Size of Teachers from SAS Nagar and Ferozepur

Districts	Sample Schools	No. of Sample Schools	No. of Teachers
Ferozepur (Blocks: 6)	Government middle schools were selected from each block	13	41 (37.2%)
SAS Nagar (Blocks: 3)		30	69 (62.7%)
Total No. of Teachers			110

Data Collection and Analysis: Data on the relevance and effectiveness of teacher education was collected through structured interview schedules and informal discussions, conducted telephonically with government middle school teachers and teacher-mentors (BRPs) from the sample schools in SAS Nagar and Ferozepur. The

teacher-mentors interviewed were subject-specific mentors for English, Mathematics and Social Sciences. The activity was undertaken between August 2020 and June 2021, during the nationwide COVID-19 lockdown. Subsequently, school visits were conducted in 2022 to interact with teachers and head teachers/principals. The collected

data was coded, and the frequency and the percentage of responses was calculated.

Results and Discussion

As shown in Table 1, a total of 41 teachers from Ferozepur and 69 from SAS Nagar were

selected for the study. Table 2 and 3 depict the demographic profile and educational qualifications of the teachers. The majority of the sample fell within the age group of 31–50 years, encompassing both male and female teachers (Table 2).

Table 2: Demographic Statistics of Teachers (Age in Years)

S.No.	Male (Age Groups)					Female (Age Groups)				
	21–30	31–40	41–50	51–60	Total	21–30	31–40	41–50	51–60	Total
SAS Nagar (69)	0	6 (8.6)	5 (7.2)	6 (8.6)	17 (24.4)	0	17 (24.6)	19 (27.5)	16 (23.1)	52 (75.2)
Ferozepur (41)	2 (12.5)	9 (56.2)	4 (25)	1 (6.25)	16 (39)	4 (16)	10 (40)	10 (40)	1 (4)	25 (60.97)
Total (110)	2	15	9	7	33	4	27	29	17	77

Note: Figures in parentheses are percentages

Table 3 shows that most respondents possessed high educational qualifications (holding a postgraduate degree along with a B.Ed or M.Ed). Besides, they were trained in educational pedagogy and

teaching–learning processes. In-service teacher education has been an integral part of employment, with training being mandatory for all teachers recruited by the State.

Table 3: Educational Qualifications of Teachers

S.No.	Educational Qualification of Teachers											
	BA/ B.Sc and B.Ed		BA/B.Sc and B.ED.		MA/M.Sc and B.Ed		MA/M.Sc and M.Ed		M.Phil		Others	
	M	F	M	F	M	F	M	F	M	F	M	F
SAS Nagar (69)	5 (7.2)	11 (15.9)	0	0	10 (14.4)	22 (31.8)	2 (2.8)	9 (13)	0	4 (5.7)	1 (1.4)	5 (7.2)
Ferozepur (41)	1 (0.41)	2 (0.82)	0	1 (0.41)	5 (2.05)	22 (9.02)	3 (1.23)	4 (1.64)	0	2 (0.82)	1 (0.41)	0
Total (110)	6	13	0	1	15	44	5	13	0	6	2	5

Note: Figures in parentheses are percentages

Nature and Mode of Training

The teachers shared that the SCERT regularly conducted in-service teacher training programmes and seminars on various aspects of classroom teaching like lesson planning, curriculum construction, etc. Since it was mandatory to attend these training programmes, all teachers included in the sample had participated in them, either

in physical or online mode (Table 4), which impacted their motivation levels. While some teachers perceived the training sessions as irrelevant and repetitive, considering them a waste of time due to the similarity of content each year, others suggested introducing a provision for recognition, incentives or rewards for teachers who actively engaged in these programmes, as it could significantly boost their motivation and enthusiasm.

Table 4: Status of Training Programmes Undertaken in 2019 and 2020

Frequency of teachers who took training	SAS Nagar		Ferozepur	
	2019	2020	2019	2020
	Physical	Online	Physical	Online
	69 (100)	69 (100)	41 (100)	41 (100)

Note: Figures in parentheses are percentages

Additionally, the nature and duration of training programmes was determined by the SCERT and the Office of the Director, School Education, Punjab, and varied each academic year. These training programmes ranged from two days to a week and were either subject-specific or covered topics like soft skills, leadership, ethics, etc. They also covered pedagogical skills, such as the use of innovative teaching aids, activity-based learning (ABL) in subjects like geography, English and mathematics. The teachers employed engaging teaching-learning methods, such as teaching Vedic mathematics and introducing the 'Word of the Day' exercise to improve vocabulary, enhancing students' interest and motivation, while reducing the likelihood of dropouts.

The teachers informed that the training content during the COVID-19 pandemic initially focused on the use of online platforms like Zoom, Google Classroom, as well as constructing and utilizing Google forms. While teachers had previously incorporated technology into their teaching, like using YouTube and creating video clips for students, their proficiency and confidence in using digital tools for education improved significantly. However, master trainers preferred physical mode of training over online sessions. Additionally, no training calendar was available online or provided to the researchers.

Training Need Assessment

Teachers and SCERT officials in Punjab, stated that teachers' training needs were assessed on the basis of the feedback

provided by the respondents. The feedback was recognized as a vital component of the education process, with all participants confirming that they completed feedback forms and provided suggestions at the end of training programmes. However, a significant number of respondents expressed that their suggestions were often overlooked, primarily due to centralized decision-making on training schedules by higher authorities. SCERT officials in SAS Nagar clarified that despite their earnest efforts to tailor training sessions based on needs analysis and incorporate teacher suggestions, they sometimes had to follow directives from the Central and State governments. This occasionally resulted in hastily planned training programmes, making it challenging to fully align with the preferences and recommendations of the participating teachers.

Material or Equipment Provided at the Training Centres

The availability and use of necessary resources, such as teaching-learning materials (TLMs), technology and support staff during and after training, can influence how teachers perceive the effectiveness of training. All respondents agreed that they were provided with TLMs like globes, maps, science charts, etc., during training to make the learning process engaging, interactive and practical for students.

Table 5 outlines the teachers' responses regarding the utilisation of the provided TLMs in classrooms during teaching-learning process.

Table 5: Use of TLMs at Training Centres

TLMs provided at schools	SAS Nagar (N=69)		Ferozepur (N=41)	
	Yes	No	Yes	No
Films and filmstrips	17 (24.6)	52 (75.3)	10 (24.39)	31 (75.6)
Globes, wall maps, relief maps	24 (34.7)	45 (65.3)	26 (63.4)	15 (36.5)
Science charts and models	32 (46.3)	37 (53.6)	23 (56.09)	18 (43.90)
Projectors and tape recorders	11 (15.9)	58 (84.0)	25 (60.97)	16 (39.02)
Social Sciences charts	11 (15.9)	58 (84.0)	17 (41.46)	24 (58.5)
Others	12 (17.3)	57 (82.6)	02 (4.87)	29 (70.73)

Note: Figures in parentheses are percentages

On visits to the sample schools, it was observed that science kits, models of human heart, human organs, globes, maps, mathematical models, etc., were stored in a designated room, and teachers frequently used these aids for demonstrations. However, the teachers' responses to the questionnaire, as shown in Table 5, does not present an encouraging picture.

In SAS Nagar, most of the respondents did not use TLMs like films and filmstrips (75.3%), science charts and models (53.6%), projectors and tape recorders (84%), and social sciences charts (84%) while teaching. Only 34.7% used globes, wall maps and relief maps.

The findings further indicate that teachers in SAS Nagar and Ferozepur districts restrictively used TLMs, technology and support material/equipment in their classrooms due to limited availability of resources. Additionally, many teachers had to visit DIETs, which were often located at faraway locations, to collect TLMs. So, most teachers in SAS Nagar did not use these materials.

In contrast, in the border district of Ferozepur, the usage of TLMs in classroom varied significantly. For instance, only 24.39% used films and filmstrips; 63.4% used globes, wall maps and relief maps; 56.09% used science charts and models; and 41.46% used social sciences charts. All teachers unanimously agreed that training had positively impacted students' learning outcomes. Training programmes had enhanced their knowledge, skills and capabilities to teach creatively.

Additionally, most middle schools were now equipped with projectors, television sets and Internet connectivity further supporting the teaching-learning process.

As shared by teachers and principals of sample schools, the condition of school infrastructure, including classrooms, libraries and laboratories, can affect the practicality of applying what is learned during training. Further, there is a need to put in more efforts to motivate teachers to use TLMs provided in schools. Post-training monitoring is essential to make training effective and productive.

Use of New and Innovative Techniques

Teachers have been introduced to various teaching strategies, such as group methods, project work, reading skills, new concepts of evaluation in class tests, field studies, etc. Table 6 shows that a majority of teachers in both districts used improvised teaching aids, project method of teaching and group methods.

The teachers also used smart boards, charts, posters, laboratories, television sets and digital technology. They shared that students were actively engaged in learning and were encouraged to collaborate with their peers in groups to showcase their learning. However, senior teachers showed resistance to new teaching approaches and expressed dissatisfaction when a younger teacher became their mentor and conducted training sessions.

Table 6: New Teaching Techniques Introduced in Classroom due to the Training Received

New Techniques Introduced in Classroom Teaching	SAS Nagar (N=69)		Ferozepur (N=41)	
	Yes	No	Yes	No
Group methods in teaching	43 (62.31)	26 (37.68)	31 (75.60)	10 (24.39)
Project method of teaching	44 (63.76)	25 (36.23)	25 (60.97)	16 (39.02)
Developing reading skills	39 (56.52)	30 (43.47)	22 (53.65)	19 (46.34)
Use of improvised teaching aids, tools and equipment	46 (66.66)	23 (33.33)	28 (68.29)	13 (31.70)
New concept of evaluation used in designing class tests	21 (30.43)	48 (69.56)	16 (39.02)	25 (60.97)
Lectures	19 (27.53)	50 (72.46)	17 (41.46)	24 (58.53)
Classwork and coursework	31 (44.92)	38 (55.07)	20 (48.78)	21 (51.21)
Homework	25 (36.23)	44 (63.76)	21 (51.21)	20 (48.78)
Field studies	09 (13.04)	60 (86.95)	11 (26.82)	30 (73.17)
Others	01 (1.44)	68 (98.55)	9 (21.95)	32 (78.08)

Note: Figures in parentheses are percentages

Implementation of Activities Post-training

The sample teachers were asked about the various activities organised in their schools post-training (Table 7). In SAS Nagar, most respondents reported introducing experimental projects after the training, while in Ferozepur, a majority of the respondents did not introduce such projects in science and mathematics classes. Audio-visual aids were largely unused in SAS Nagar but were embraced by a significant

percentage of teachers in Ferozepur. Very few schools in both districts initiated activities like class libraries, museums, student clubs, and student government or Model United Nations (MUN). Notably, due to limited space, some libraries operated from the head teacher/principal's office. Besides, a small number of schools in the districts organised activities like MUN or mock parliaments. Despite these efforts, further collective involvement from all stakeholders was deemed necessary for sustained impact of training programmes.

Table 7: Activities Organized by Teachers in Their Schools Post-Training

Activities Organised	SAS Nagar (N=69)		Ferozepur (N=41)	
	Yes	No	Yes	No
Experimental projects	39 (56.52)	30 (43.47)	15 (36.58)	26 (63.41)
Class museums	02 (2.89)	67 (97.10)	02 (4.87)	39 (95.12)
Class Libraries	15 (21.73)	54 (78.26)	13 (31.70)	28 (68.29)
Student clubs	08 (11.59)	61 (88.40)	10 (24.39)	31 (75.60)

Making improvised A/V Aids	08 (11.59)	61 (88.40)	26 (63.4)	15 (36.5)
MUN/Mock Parliament	04 (5.79)	65 (94.20)	06 (19.35)	25 (80.64)
Others	05 (7.24)	64 (92.75)	03 (9.67)	28 (90.32)

Note: Figures in parentheses are percentages

Hindrances Faced in Using New Techniques

It was assumed that teachers encountered several challenges in using new techniques, such as pressure to complete the syllabus, lack of support, time management,

curriculum adjustments, discipline issues, and feeling overwhelmed by workload and time constraints. However, the findings indicate that a majority of the respondents in both the districts did not face any major challenge in implementing the new techniques learnt in training sessions (Table 8).

Table 8: Hindrances in Using New Techniques

Hindrances	SAS Nagar (N=69)		Ferozepur (N=41)	
	Yes	No	Yes	No
Rigid syllabus	02 (2.89)	67 (97.1)	13(31.70)	28(68.29)
Excessive emphasis on final exams	01 (1.44)	68 (98.5)	09 (21.95)	32(78)
Overloaded teaching schedule	03 (4.34)	66 (95.65)	16(39)	25 (60.97)
Others	56 (81.15)	13 (18.84)	23 (56.09)	18 (43.90)

Note: Figures in parentheses are percentages

The DIETs provide academic and resource support to schools by developing materials and creating instructional aids, which can be utilised by schools to improve the quality of teaching. Table 9 depicts the responses of the sample teachers in SAS Nagar and Ferozepur regarding the difficulties faced in using audio-visual aids. In SAS

Nagar, only 14.49% teachers cited lack of facilities at school, and 8.69% mentioned inadequate transportation facilities for securing audio-visual aids from training centres as hindrances. In Ferozepur, the teachers faced problems due to the lack of infrastructure facilities and other resources (Table 9).

Table 9: Difficulties in using the audio-visual materials

Sl.No.	New Techniques Introduced in Classroom Teaching	SAS Nagar (N=69)		Ferozepur (N=41)	
		Yes	No	Yes	No
1.	Lack of facilities at school	10 (14.49)	59 (85.5)	09 (21.9)	32 (78)
2.	Inadequate transportation facilities	03 (4.34)	66 (95.6)	05 (12.1)	36 (87.8)
3.	Inadequate arrangements for securing them from training centres	06 (8.69)	63 (91.3)	05 (12.1)	36 (87.8)
4.	Lack of cooperation from concerned persons	0	69 (100)	07 (17)	34 (82.9)
5.	Others	53 (76.81)	16 (23.1)	25 (60.97)	16 (39.02)

Note: Figures in parentheses are percentages

Teachers' Perception regarding the Impact of Training Received

Table 10 shows that a majority of the teachers (92.75% in SAS Nagar and 85.3% in Ferozepur) believed that training helped them explain concepts to students in a

better way, improving their understanding. Similarly, 75.36% teachers in SAS Nagar and 85.3% in Ferozepur felt that there was a positive change in the learning attitude of students, as they were now able to impart education in a more effective and efficient manner after receiving training.

Table 10: Effect of Training Received

Effect of Training	SAS Nagar (N=69)		Ferozepur (N=41)	
	Yes	No	Yes	No
Change in the learning attitude of students	52 (75.36)	17 (24.63)	35 (85.3)	06 (14.6)
Better understanding of concepts	64 (92.75)	5 (7.24)	35 (85.3)	06 (14.6)
Understanding of the concepts remains the same	05 (7.24)	64 (92.75)	04 (9.75)	27 (65.85)
Improved achievement as shown by test scores	34 (49.27)	35 (50.72)	24 (58.53)	17 (41.4)
Encouraging the interest of learners	46 (66.66)	23 (33.33)	34 (82.9)	07 (17.07)
Others	01 (1.44)	68 (98.55)	08 (19.5)	33 (80.48)

Note: Figures in parentheses are percentages

Furthermore, to varying degrees, sample teachers in both districts felt that there had been an improvement in the achievement levels of students and that their interest in learning had enhanced. These aspects of student achievement were confirmed through telephonic interviews and discussions with the teachers during field visits.

Teachers' Perceptions on Continuous Monitoring by Teacher-mentors

In Punjab, subject-specific teacher-mentors (BRPs) have been assigned to school teachers to improve teaching-learning and

pedagogy. Their primary responsibility is to maintain regular contact with teachers by visiting the assigned schools, monitoring their pedagogy post-training and providing immediate solutions to challenges faced. It was learned that teacher-mentors visited the selected schools to observe classroom sessions during regular teaching conditions. They also reviewed materials, such as notebooks, lesson plans, test papers and TLMs in a supportive manner. The teachers were evaluated based on these aspects and constructive feedback was provided for improvement. Additionally, the mentors conducted demonstration lessons to model effective teaching practices for the teachers.

Table 11: Frequency of Teacher-mentors' School Visits

S. No.	Frequency of Visits	SAS Nagar (N=69)	Ferozepur (N=41)
		Yes	Yes
1.	Once a fortnight	49 (71.01)	23 (56.09)
2.	Once a month	08 (11.59)	10 (25.8)
3.	Once a year	03 (4.34)	07 (22.5)

4.	Once a term	03 (4.34)	01 (3.2)
5.	Never	06 (8.69)	0

Note: Figures in parentheses are percentages

The frequency of teacher-mentors' visit to schools was discussed with the respondents (Table 11), and a majority of the teachers (71.01% in SAS Nagar and 56.09% in Ferozepur) stated that their subject-specific teacher-mentors visited their schools regularly once a fortnight, attended their classes and monitored their way of teaching. However, a few teachers in both districts said their teacher-mentors rarely visited their schools—either once every two terms, or once a year, or never. While these responses were scattered, they raise concerns and authorities need to closely monitor the situation. Some teachers specifically pointed out that the lack of follow-up support hindered the application of new teaching strategies in their classrooms.

Perceptions of Head Teachers or Principals and Mentors

The head teachers or principals in the sample schools reported that teachers' training programmes were useful and effective in classroom management and teaching practices. They opined that these training programmes had a positive impact on learning outcomes, and provided opportunities for collaborative learning and sharing of best practices with fellow teachers. However, discussions with head teachers or principals highlighted several challenges, such as resistance of senior teachers to participate in training sessions and adopt new teaching methods, balancing academic and administrative responsibilities, managing multiple classes by a single teacher, and difficulties in completing the syllabus on time.

All teacher-mentors unanimously agreed that the training provided to teachers was highly relevant and effective in enhancing their pedagogical skills and positively impacting learning outcomes. However,

they collectively emphasised the need to fill vacancies in DIETs, develop a curriculum tailored to specific needs and return to offline training to further improve its effectiveness.

Perception of State Officials

Officials from the State government involved in in-service teacher training programmes found the process to be thorough and comprehensive. They believed the training sessions were effective and aligned with teachers' needs. SRG members were generally satisfied with the training but recommended some updates to ensure it remains relevant to current educational needs. Based on the discussion, the challenges faced by key stakeholders have been identified, and some policy recommendations have been made.

Challenges in Implementation

The teachers, as well as the head teachers or principals, largely expressed their satisfaction with the nature and content of training imparted. They also shared various challenges faced during the training sessions, which impacted both the effectiveness of the programmes and their overall professional development, as elucidated below.

Issues in Teacher Training Institutions in Punjab

According to the Annual Work Plan and Budget, 2019–20, Government of Punjab, there were over 82% vacancies in sanctioned academic positions at DIETs and 55% at SCERT, Punjab. The document mentioned that organisational restructuring of SCERT was underway and the training centres were operating with deficient staff. Despite repeated visits by the research team to SCERT, Punjab, the officials failed to provide a training calendar and statistical data with

respect to the total number of teachers trained annually. This highlights significant gaps in staffing, which directly impacts the capacity and quality of teacher training programmes in the state. These issues are critical for understanding systemic limitations affecting the overall quality and reach of teacher training initiatives in Punjab.

Difficulties Faced by Teachers

Teacher Workload and Time Constraints:

The respondents shared that their workload, including extracurricular duties and administrative tasks, affected their capacity to actively participate in training programmes and apply what they learnt during the sessions.

Lack of Relevance of Training Programmes:

If the training programmes were not directly related to their subject areas or grade levels, the teachers perceived them as irrelevant and a waste of time. Besides, many senior teachers, who had undergone several training sessions in previous years, found the content to be repetitive year after year.

Limited Resources: In many cases, teachers in both rural and urban schools had limited access to TLMs, technology and support, making it difficult to implement new strategies in their classrooms.

Resistance to Change: Some respondents also resisted new teaching methods or approaches introduced during training programmes, especially if they had been teaching in a certain way for a long time. Additionally, senior teachers expressed dissatisfaction when a young or new teacher became their teacher-mentor and conducted their training sessions.

Insufficient Training Follow-ups: Some of the respondents shared that teacher-mentors followed-up on training programmes, but their visits were irregular and ineffective. They felt the lack of consistent follow-up support and mentorship after the training sessions hindered the application of new skills and strategies in classrooms.

Challenges Faced by Head Teachers or Principals

The head teachers or principals included in the study were supportive of teacher training programmes, but they pointed out several challenges when they had to relieve their teachers for training sessions.

Resource Allocation: Head teachers and principals often struggled to allocate the necessary resources for in-service training, including time, funding (substitute) and personnel. They also mentioned problems, such as a single teacher managing multiple classes simultaneously and difficulties in covering the syllabus on time. These problems were particularly felt in schools having less than five teachers.

Teacher Resistance: Informal discussions revealed resistance of senior teachers to participate in training sessions and adopt new teaching methods. In fact, many teachers felt these sessions to be irrelevant and demotivating.

Balancing Administrative Duties: It was observed that head teachers and principals had to perform numerous administrative duties, which were time-consuming. They shared that balancing these responsibilities while also attending training sessions was challenging, and they struggled in managing competing priorities.

Evaluating the Impact of Training Sessions: The teachers stated that it was challenging to evaluate the impact of in-service training on teachers' performance and learning outcomes, as it requires both time and expertise in assessment methods.

Addressing these challenges requires a multi-faceted approach that includes not only designing effective training programmes but also providing ongoing support, recognising the unique needs of teachers and schools, and fostering a culture of continuous improvement in education. Collaboration among teachers, principals and educational authorities is crucial to overcome these challenges and ensure the success of in-service teacher training.

Policy Recommendations

The research demonstrates that in-service training by SCERT, Punjab, has been beneficial to teachers, but there is scope for improvement. It has been found that teachers exposed to modern teaching methodologies and subject-specific training are more likely to implement innovative approaches in the classroom, leading to enhanced student engagement and learning outcomes. Based on the research findings, the following policy recommendations are suggested.

Need-Based Training: It is important to regularly evaluate the effectiveness of training programmes and gather feedback from teachers to make necessary improvements. Further, customized need-based training modules should be developed to cater to the specific needs and challenges faced by teachers at different stages.

Technology Integration: SCERT, Punjab, should incorporate more technology-based training methods to improve teachers' digital literacy and equip them with modern teaching techniques. Additionally, digital interventions aimed at strengthening teacher-student interactions in classrooms should be prioritised.

Structured Follow-up and Mentorship: The State should establish consistent and effective follow-up mechanisms through teacher-mentors. Regular visits and continuous post-training support are essential to facilitate and evaluate the application of acquired skills in classrooms.

Nurturing Leadership and Decision-making:

Focusing on the training and professional development of newly promoted principals or head teachers is crucial. Additionally, the State government must ensure that most talented and committed teachers, not just the most senior, are selected into roles to lead clusters, blocks and districts. These leaders require extensive training in leading change, coaching, facilitating and managing teacher performance.

Conclusion

Thus, it can be concluded that effective teacher training plays a pivotal role in shaping student learning outcomes. Dynamic and engaging teaching methodologies not only boost student interest and motivation but also significantly reduce the likelihood of student dropouts. Moreover, sustaining this impact requires a continuous cycle of support and evaluation. Through consistent follow-up and robust evaluation mechanisms, the enduring effects of training on classroom practices and student achievements are reinforced, ensuring a profound and lasting influence on the educational journey.

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Attitudes and Perceptions towards Sustainable Development among Prospective Teachers

Poonam Bharti*, Chhaya Soni**

According to Brundtland (1987), "Meeting the present needs while not compromising with the needs of future generations is called sustainable development." Education for sustainable development equips individuals with the ethics, beliefs and knowledge needed to shape a non-consumptive future. Sustainable development considers not only environmental factors but also social and economic aspects. Additionally, education for sustainability makes use of the entire education system to provide students with the skills needed for a sustainable future (Sulaiman, 2019). Prospective teachers play a vital role in education as they will create a new generation by educating students. Therefore, it is important to assess their understanding of sustainable development and identify the requirements to prepare them for this role. This paper aims to explore prospective teachers' perceptions of sustainable development and their attitude towards it. A total of 146 prospective teachers from the Faculty of Education, BHU were selected using a simple random sampling technique. The study is based on a survey, in which the participants completed an e-questionnaire designed by Sultan and Kanazawa (2019) to assess their attitudes and perceptions regarding sustainable development. The questionnaire consisted of statements rated on a 4-point Likert Scale, ranging from 1 (strongly disagree) to 4 (strongly agree). Each statement's level of agreement was ranked accordingly. The survey measured the participants' perceptions and attitudes towards sustainability-related issues, covering three dimensions—social, economic and environmental sustainability. To facilitate analysis and to connect the participants' responses to several topics, the questions were coded. The findings indicate that apart from certain sustainability aspects focussed on economic and environmental issues, prospective teachers generally hold positive perspectives and attitudes towards sustainable development. In particular, they demonstrate a strong inclination towards education for social equity, environmental protection and sustainable development. However, their attitude towards biodiversity conservation is not as favourable. Additionally, the study reveals that urban and rural prospective teachers share similar perceptions and attitudes towards sustainable development. In contrast, differences exist between male and female respondents in this regard. Thus, while the place of residence does not impact perception and attitude, gender does. A key limitation of this study is that its findings are restricted to prospective teachers those studying in education faculty and colleges affiliated to BHU.

Keywords: Sustainable development, education for sustainable development, prospective teachers, attitude, perception

Introduction

The Earth is often perceived as a stable, because of its ability to maintain balance through various natural processes like carbon cycle, water cycle, ecological succession etc. However, modern activities

like technology, industry and agriculture are exploitative, causing significant environmental damage. To address this issue, sustainable development principles should be integrated into all aspects of life. Sustainable development was brought to public attention by the United Nations

(UN) World Commission on Environment and Development (WCED) report titled *Our Common Future*, popularly known as the *Brundtland Report*. According to this report, sustainable development is essential for a better future. It was first presented at the UN General Assembly in 1987. Meeting the present needs while not compromising with the needs of future generations is called Sustainable development.

According to the Sustainable development Education Panel's (SDEP) statement in 1998, "Education for Sustainable development (Education for Sustainable Development, UNESCO, n.d.) is about the knowledge necessary to maintain and improve both our quality of life and the quality of future generations." It aims to educate people about environmental, social and economic issues that are at stake while also providing them with the necessary tools to live sustainably. It focuses on ensuring preparedness for the world in the twenty-first century. According to UNESCO, "Education for sustainable development empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society for the present and future generations, while respecting cultural diversity" (UNESCO, n.d.).

The primary goals of education for sustainable development are as follows.

1. **Economic growth:** It refers to the process of creating a viable economy that is growing in the right way.
2. **Preserving the environment:** by reducing waste and pollution and working to reduce global carbon emissions, this objective focuses on how humans may help preserve and enhance the natural environment.
3. **Social acceptance:** The objectives of this aim are to provide homes for future generations and to encourage the growth of strong, vibrant global communities.

To realise the vision of a sustainable future, the 17 Sustainable Development Goals (SDGs) and their 169 goals were included

in the historic United Nations General Assembly summit in September 2015, based on the primary goals of sustainable development. The overall process of sustainable development aims to safeguard our society, economy and environment, ensuring the protection of our world while enabling further progress (Halder, et al., 2022). Higher education institutions are major drivers to foster the understanding of sustainability and shape future leaders for achieving a sustainable future for everyone (Saidatulakmal, et al., 2022). They also play a crucial role in helping future professionals develop attitudes and ideas about sustainable development that will eventually assist humankind accomplish the objectives of sustainable development (Idris and Balakrishn, 2019).

Literature Review

Aleixo, et al. (2021) conducted a study to understand students' perceptions of sustainable development in Portugal's public higher education institutions. The findings revealed that while students generally recognise the importance of sustainable development, they believe institutions should provide more training on the subject. Although many students are engaged in personal practices like reducing, reusing and recycling, participation in organised environmental activities remains limited. Egyptian students, on the other hand, have a strong sense of duty towards their country, local community and neighbourhood, actively conveying the principles of sustainable development to their loved ones, friends and neighbours. Many students suggested practical efforts, field visits and project-based work to help them better learn the material (Khalil, et al., 2013).

Except for concerns related to economic and social boundaries, Malaysian students have positive opinions and attitudes towards all aspects of environmental, economic and social sustainability. A sense of responsibility for sustainability has been fostered among undergraduate students through sustainable

development education provided by higher education institutions (Idris and Balakrishn, 2019). However, the implementation of education for sustainable development at the secondary stage presents difficulties for teachers due to the lack of resources, material and training. These challenges are a result of both internal and external issues. For students to adopt sustainable attitudes and behaviours, education for sustainable development must be structurally integrated into the curriculum (Kougias, et al., 2022).

At Universiti Sains Malaysia, students exhibit a moderate to high positive attitude towards sustainability on campus, with a significant positive correlation between their perceptions and attitudes. The adoption of sustainability programmes at Universiti Sains Malaysia was viewed well by its students, who could connect sustainability issues with current events (Saidatulakmal, et al., 2022).

Similarly, undergraduates in Nigeria hold favourable opinions about the concept of sustainable development and are urging the National Universities Commission to include education for sustainable development into all university curricula (Abenu, et al., 2023). Halder, et al., (2022) examined the attitudes of 100 trainee teachers in Purulia, West Bengal, towards sustainable development. The results showed no significant differences in attitudes based on gender, place of residence (rural and urban), or academic stream (arts and science). However, a significant difference was observed between urban male and urban female trainee teachers. Leal, et al., (2024) analysed the perceptions of sustainable development among higher education students and identified significant gender differences in sustainability knowledge, attitudes and behaviour. Female students had higher mean scores than their male counterparts in all these aspects.

Rationale of the Study

Gregory's Direct Perception Theory, developed in 1970, explains how individuals

form perceptions based on available information (Idris and Balakrishn, 2019). Gregory argues that perception is an active process that involves drawing conclusions and interpreting information from context, prior knowledge and experience. According to the theory of instruction, one's attitude towards a particular class of objects, people or events is influenced by the internal states acquired over time. Thus, the affective learning domain shapes attitude, whereas the cognitive learning domain shapes perception.

This study explores how people's perceptions of sustainability concerns are constructed and influenced by learned internal states (Idris and Balakrishn, 2019). A favourable attitude towards sustainability can be fostered through accurate perceptions of sustainability. Esa (2010) highlights a significant relationship between information and attitude, stating that greater knowledge results in a more optimistic attitude (Idris and Balakrishn, 2019).

This study focuses on understanding the attitudes and perceptions of aspiring educators towards sustainable development and the role of education in promoting it. Sustainable development is essential for the well-being of both present and future generations. Given the limited availability of relevant material, it is essential to understand how the younger generation and future educators perceive sustainable development.

The United Nations promotes sustainable development through education, recognising it as a powerful tool for societal change. In line with this idea, a paper titled Environment, Peace, Health and Values for Quality Life has been introduced as a part of the B.Ed curriculum. For prospective teachers, understanding sustainability is particularly important, as teachers serve as role models for students. Acquiring knowledge, skills and awareness of sustainability empowers future teachers to positively shape society, economy and environment (Halder, et al., 2022). Understanding their views on sustainable

development can provide valuable insights into how they may contribute to fostering sustainable practices.

Research Questions

4. What is the perception of prospective teachers towards sustainable development?
5. What is the attitude of prospective teachers towards sustainable development?

Research Objectives

This paper explores the attitudes and perceptions of prospective teachers towards sustainable development. The study examines prospective teachers' perceptions towards sustainable development based on the following variables.

- Gender (Male/Female)
- Resident (Rural/Urban)

Additionally, the study analyses the attitude of prospective teachers towards sustainable development based on the following variables.

- Gender (Male/Female)
- Resident (Rural/Urban)

Research Method

For this investigation, a descriptive survey approach was used.

Result and Discussion

Sample

A total of 146 prospective teachers were selected as sample using the simple random sampling technique from the Faculty of Education, Banaras Hindu University, Varanasi. These teachers have received environmental education as part of their B.Ed curriculum.

Tool

This study utilised a perception and attitude e-questionnaire developed by Sultan and Kanazawa (2019). The researchers assessed its validity at the ground level. The questionnaire included four options—strongly agree, agree, disagree and strongly disagree. The 24-item e-questionnaire covered three important dimensions—social, economic and environmental sustainability. It consisted of 12 statements for perception and 12 for attitude, with a minimum score of 12 and the maximum of 48 for each criterion. The e-questionnaire link was sent to the respondents through email and shared on their mobile phones.

Data Analysis

The data were analysed using the mean value, standard deviation (SD) and t-Test.

Table 1: Scores on e-Questionnaire of Prospective Teachers

Scores on Questionnaire	Perception	Attitude
25–28	0	2
29–32	2	0
33–36	22	42
37–40	50	52
41–44	52	34
45–48	20	16
Total	146	146

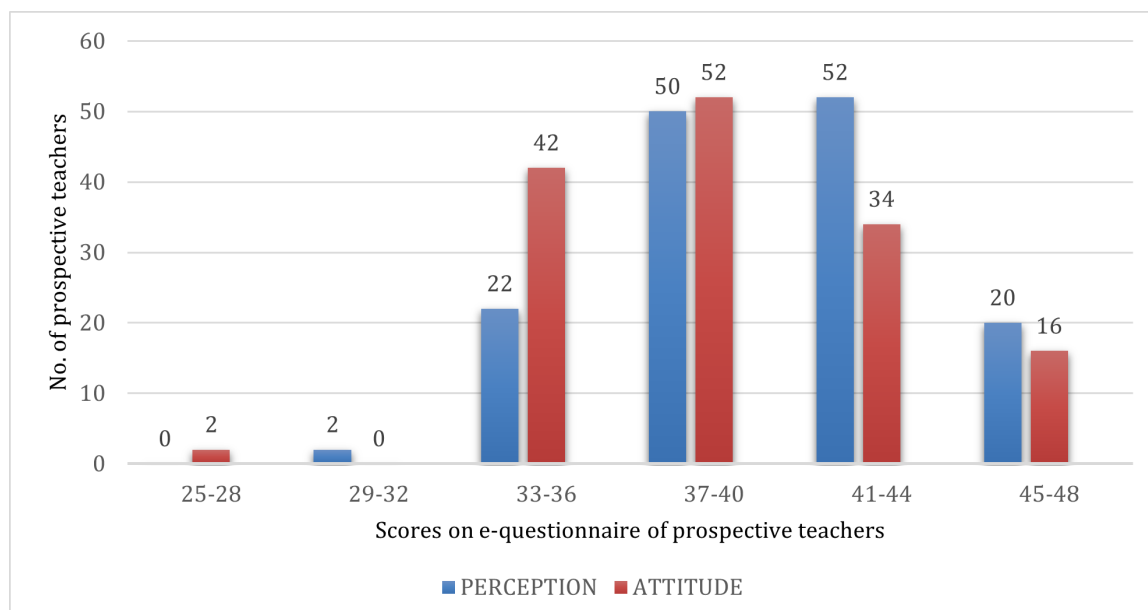


Figure 1: Histogram presenting the perception and attitude scores of prospective teachers towards sustainable development

Table 2 presents the mean values and standard deviations of the prospective teachers. The scale range used to gauge the prospective teachers' perceptions and attitudes is as follows: 1.81–2.60 indicates

inadequacy, 2.61–3.40 represents a moderate scale, 3.41–4.20 signifies a favourable or positive perception, and 4.21–5.00 denotes a highly favourable or highly positive (adapted from Orlanda-Ventayen and Ventayen, 2017).

Table 2: Mean Value and SD of Prospective Teachers on each items of Perception and Attitude

Statement No.	Statements	Mean Value	SD
Section A: Perception			
A1	Persons ought to have a proper education that instils the values, information and skills necessary for everyday living.	3.76	0.42
A2	It is the responsibility of the present generation to ensure that the future generation inherits the same health level as them.	3.56	0.66
A3	In today's world, gender equality is crucial.	3.69	0.54
A4	Future generations should benefit from a society's sociocultural heritage.		
3.16	0.68		
A5	It is imperative to safeguard the ecosystem for the benefit of present and future generations.	3.79	0.43
A6	Biodiversity conservation is essential.	3.78	0.41
A7	The responsibility for maintaining the environment and its resources rests with people.	3.63	0.51

A8	Everyone ought to take necessary actions to counteract the consequences of global warming.	3.52	0.57
A9	High standards of life should be offered by industrialised nations to their citizens.	3.13	0.67
A10	The overuse of natural resources for economic growth does not pose a threat to the well-being of future generations.	1.54	0.71
A11	There should be less of a financial divide between the wealthy and the impoverished.	3.39	0.56
A12	The success of commercial operations depends on equality in society.	3.32	0.62
Section B: Attitude			
B1	In society, men and women need to have equal access to opportunities.	3.66	0.58
B2	The interaction of several cultures is fascinating and enlightening.	3.16	0.62
B3	Citizens should have access to quality government healthcare services.	3.56	0.57
B4	Education for all should be the government's responsibility.	3.64	0.51
B5	When individuals alter the environment, it frequently has devastating results.	3.45	0.55
B6	There is a tight relationship between the preservation of the environment and people's level of living.	3.47	0.60
B7	Protecting the environment and biodiversity is more vital than industrial development.	2.86	0.67
B8	Intense agricultural productivity should be sacrificed in order to preserve biodiversity.	2.97	0.62
B9	Even if it requires more funding, government-implemented economic policies should support sustainable manufacturing.	3.02	0.68
B10	To reduce disparities in economic status between populations, additional sacrifices from people are required.	2.64	0.76
B11	If a country is squandering its natural resources, then economic measures ought to be put in place by the government.	3.42	0.60
B12	Greater emphasis should be placed on reducing poverty than improving general economic well-being.	3.17	0.71

For the first research question, which examined how prospective teachers perceive sustainable development, the mean scores for statements A1 through A12 (as shown in

Table 2, Section A) ranged from 1.54 (SD = 0.71) to 3.79 (SD = 0.43). The second research question (as presented in Table 2, Section B) assessed the respondents' opinions on

standard development, with mean scores for statements B1–B12 ranging from 2.64 (SD = 0.76) to 3.66 (SD = 0.58).

The respondents' positive attitudes and perceptions of education for sustainable development are reflected in the high average mean scores (above 3.4) for questions A1 and B4. Similarly, their positive attitudes and perceptions towards social equality are evident from their high average scores (above 3.4) on statements A3 and B1.

In contrast, Section B statements—B7 and B8 had low average scores (below 3.4) and statements B6, B5 and B11 had high average scores (above 3.4). Also, statements A5, A6 and A7 recorded high mean scores (above 3.4). Based on the previously described inquiries, which assessed viewpoints and sentiments concerning environmental sustainability, the respondents clearly had a favourable perception towards environmental protection and biodiversity conservation. However, their attitude towards biodiversity conservation was not favourable.

For statements A2 and B3, the respondents' perceptions and attitudes towards good health and healthcare services were found to be inadequate, indicating a lack of prioritisation of social and economic equality. To achieve SDG 2030 goals, educators should raise these concerns.

Statement A10 in Table 2 assessed the respondents' opinions on the balance between environmental conservation for future generations and economic development. It received the lowest average score (Mean Value = 1.54, SD = 0.71). The findings indicate that the respondents generally hold favourable opinions on environmental protection. This suggests that prospective teachers have been made aware of the importance of environmental sustainability through education in their educational institutions. As a result, they believe that environmental sustainability

should take precedence over economic development.

Statements A12 and B10 focus on the economic and social aspects of sustainable development. The average scores for these statements are 3.32 and 2.64, respectively, indicating that the prospective teachers consider themselves less responsible for promoting a fair and equitable society for economic development. Additionally, they do not exhibit a sufficiently positive attitude towards efforts being made by people at reducing economic inequalities. One reason for this may be that social and economic equality have not been given enough attention in education for sustainable development (Saiz and Donald, 2017). To accomplish the SDG 2030 goals, educators in sustainable development education need to make serious efforts to highlight these concerns and raise awareness among prospective teachers.

The above table shows that the scores obtained by the prospective teachers on the statements in section A and B have high average scores and SDs, except for certain aspects of sustainability related to economic and environmental issues. This suggests that they have a generally favourable perception and attitude towards sustainable development, particularly in the areas of education for sustainable development, environmental protection and social equity. However, the prospective teachers exhibit an unfavourable attitude towards statements related to biodiversity conservation, indicating a lack awareness in this aspect. These findings align with those of Idris and Balakrishn (2019), who found that Malaysian undergraduate students had favourable perceptions and attitudes towards sustainable development, especially concerning environmental issues.

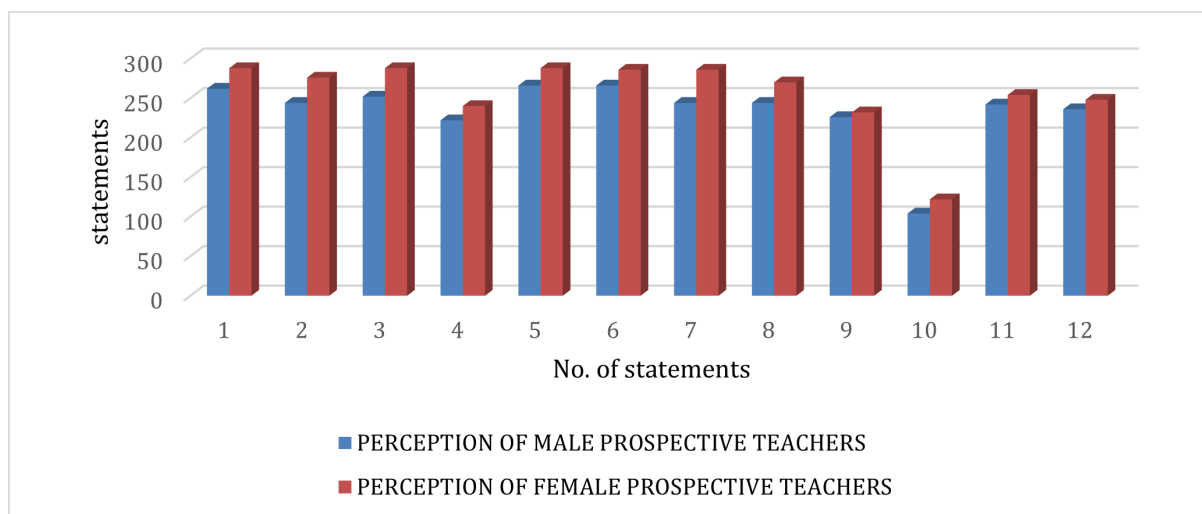


Figure 2: A histogram showing the perception of prospective teachers towards sustainable development on the basis of gender

Table 3: Gender-Based Perception of Prospective Teachers on Sustainable Development

S. No.	Gender	No. of Prospective Teachers	Mean Score	Degree of Freedom	t-Calculated Value	t-Tabulated Value	Result
1.	Male	68	41.29	142	3.29	1.98	Significant*
2.	Female	78	39.46				

*At 0.05 significance level

Table 3 shows that the value is 3.29, which is greater than the critical value of 1.98 at 0.05 level of significance. Therefore, it suggests that there is a significant difference in the perception of prospective teachers on sustainable development based on gender.

Male prospective teachers demonstrate greater awareness of sustainability compared to their female counterparts. This result contradicts the findings of Leal, et al., (2024), who reported that female students had higher mean scores on sustainable development than males.

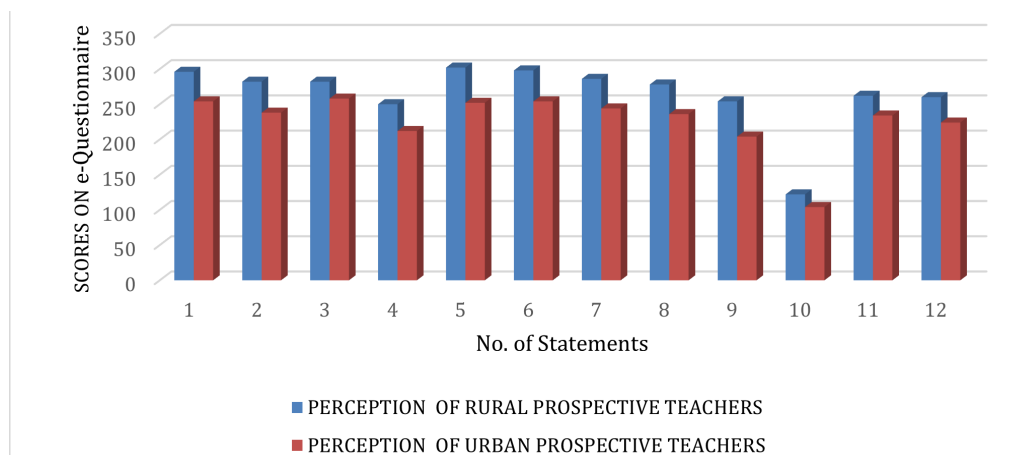


Figure 3: A histogram presenting the perception of prospective teachers towards sustainable development on the basis of residence

Table 4: Prospective Teachers' Perception towards Sustainable Development on the basis of Residence (Rural/Urban)

S. No.	Residence	No. of Prospective Teachers	Mean Score	Degree of Freedom	t-Calculated Value	t-Tabulated Value	Result
1.	Rural	78	40.67	125	1.29	1.98	Not significant*
2.	Urban	68	39.91				

*At 0.05 significance level

The computed t-value is 1.29, which, at a significance level of 0.05, is lower than the critical value of 1.98, as shown in Table 4. This

indicates that there is no significant difference in how prospective teachers from rural and urban areas perceive sustainable development.

Table 5: Attitude of Prospective Teachers towards Sustainable Development on the Basis of Gender

S. No.	Gender	No. of Prospective Teachers	Mean Score	Degree of Freedom	t-Calculated Value	t-Tabulated Value	Result
1.	Male	68	39.97	143	2.66	1.98	Significant*
2.	Female	78	38.28				

*At 0.05 significance level

The computed t-value is 2.66, which is higher than the critical value of 1.98 at 0.05 level of significance, as shown in Table 5. This indicates a significant difference in the attitudes of male and female prospective teachers about sustainable development. Compared to male prospective teachers, female prospective teachers were less

aware of environmental issues and the government's responsibility towards people, contributing to this disparity. This result does not align with the findings of Sarkar (2023), who reported females had a slightly more favourable attitude towards sustainable development than their male counterparts.

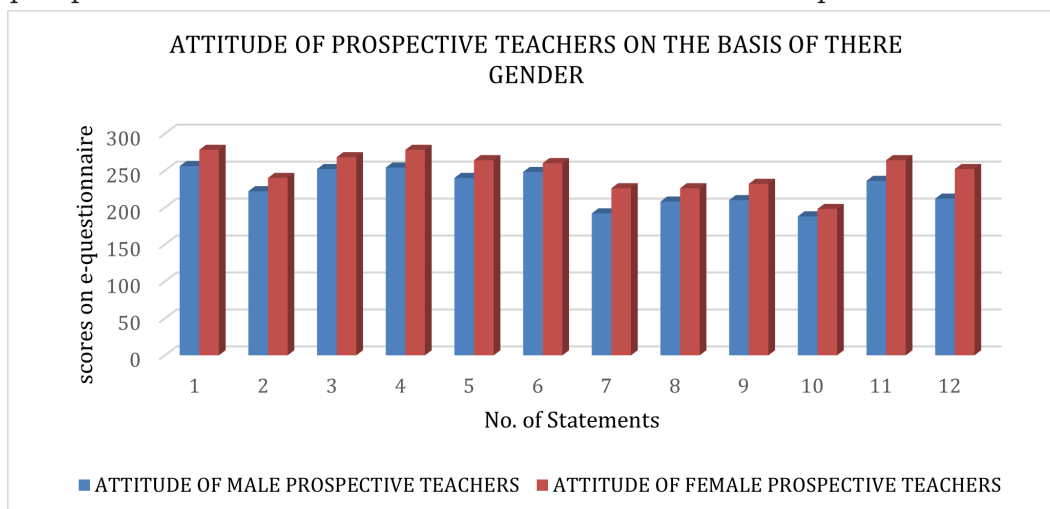


Figure 4: A histogram presenting the attitude of female and male prospective teachers towards sustainable development

Table 6: Attitude of Prospective Teachers towards Sustainable Development on the Basis of Residence (Rural/Urban)

S. No.	Residence	No. of Prospective Teachers	Mean Score	Degree of Freedom	t-Calculated Value	t-Tabulated Value	Result
1.	Rural	78	39.29	138	0.98	1.98	Not significant*
2.	Urban	68	38.66				

*At 0.05 significance level

Table 6 shows that at 0.05 level of significance, the computed t-value is 1.98, which is lower than the critical value of 0.98. Consequently, the research suggests that there is no significant difference between prospective teachers in rural and urban

areas regarding sustainable development. This result contrasts with the study by Sarkar (2023), which concluded that rural students had more attitude towards sustainable development than urban B.Ed. students.

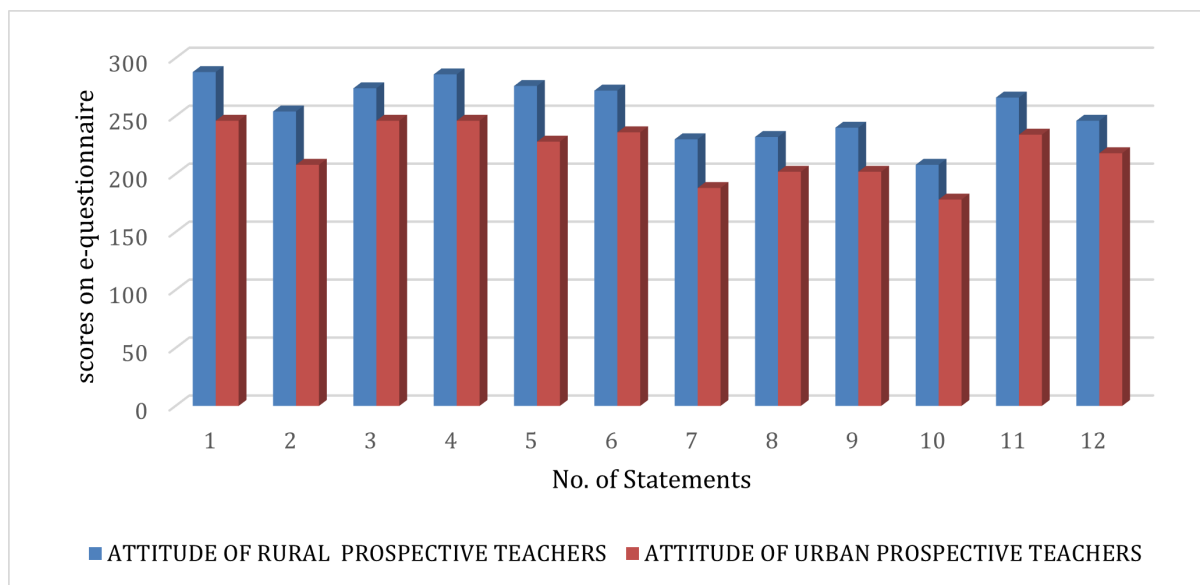


Figure 5: A histogram presenting the attitude of prospective teachers towards sustainable development on the basis of residence (rural and urban)

Conclusion

This study has shown that prospective teachers have positive perspectives and attitudes towards sustainable development. However, due to the lack of information, male and female prospective teachers hold differing views on sustainable development, except for sustainability aspects related to economic and environmental challenges. The findings demonstrate the effectiveness of

higher education institutions' environmental education programmes in educating prospective teachers about sustainability issues.

The Direct Perception Theory (Hacker, 1991) and the Theory of Instruction (Gagne and Dick, 1983) suggest that perception and attitude are shaped through knowledge acquisition, which, in this case, was facilitated by education on sustainable development.

This underscores the need for environmental educators to incorporate similar topics in sustainability education for aspiring instructors. The knowledge, skills and values acquired through Education for Sustainable Development play a crucial role in influencing how people perceive and approach sustainability, ultimately contributing to the achievement of SDG 2030.

This study is limited to the prospective teachers those studying in education faculty and colleges affiliated to BHU and employs a quantitative approach for data analysis. However, this method does not provide a comprehensive understanding of prospective teachers' perspectives and attitude. Therefore, future research could adopt a mixed-method or qualitative approach to gain deeper insights.

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Students as Contributors: Reflections on School Education Curriculum Construction Experiences

Sankaranarayanan Paleeri*, Mohammed Shiyas MV

Abstract

The grassroots-level approach to curriculum construction is innovative, emphasizing the acceptance of valuable insights, comments and suggestions from teachers to draft school education curricula. Building on this approach, the Indian state of Kerala has started involving students in curriculum creation processes. This article examines students' participation in Kerala state school curriculum development procedures. Reflections on curriculum construction experiences and students as contributors to curriculum creation were analyzed in this longitudinal study conducted from 2013 to 2023. Instructors' field notes and Focus Group Discussion (FGD) reports were utilized to organize the material. Portfolio analysis was also employed to examine the data. Students' contributions in the curriculum development processes are explained with a comparative analysis from a global viewpoint. The study highlights the potential of students to creatively contribute towards constructing their school education curriculum.

Keywords: Curriculum construction, grassroots approach, students as contributors, curriculum-building process, curriculum experts, reflections

Introduction

Ever since the investiture of learner-centered education, the involvement and participation of students in various stages of classroom pedagogical procedures have been widely accepted and appreciated. However, the idea of students playing a significant role in curriculum building for a state's school education programme has rarely been given precedence. Presently, a shift in this policy is being epitomized. The Ministry of Education, Government of Kerala, while releasing the Kerala Curriculum Framework (KCF) 2023, echoed this approach about engaging students in curriculum construction. The state government's decision to involve students in shaping the nature and features of education is new and unprecedented, having never been attempted since the formation of the unified Kerala state. Whether evaluated as a success or failure, this concept is new to Kerala's education landscape.

The grassroots-level approach to curriculum construction is a globally recognized and comparatively new approach. It emphasizes that all aspects of curriculum development should begin at the lowest level of the education system. This approach includes the design, expansion and implementation of the curriculum based on the needs, experiences and perspectives of students, teachers and other grassroots-level stakeholders involved in the field (Iyengar & Iyengar, 2023). This model of curriculum construction has been followed in many countries in recent years. The decision to include students in the process of curriculum construction in the Kerala state school education system was a proactive step aligned with the grassroots-level approach.

The concept of student agency in curriculum construction began gaining ground only in the

early years of the new millennium. Student participation in curriculum construction is a complex and layered category with multiple shades (Mitra & Gross, 2009; Ruddock & Flutter, 2006). To guard against the possible extension the term may take in diverse educational contexts, the researchers have confined the role of students to building the content and structure of the curriculum. The engagement of students in the curriculum preparation processes aligns with the management theory called 'Participatory Design Project', which ensures the involvement of the end user in the decision-making process (Levin, 2000).

Background, Review and Significance of the Study

As a prelude to the main arguments of the research, it is pertinent to discuss the key elements related to the question of learner participation in curriculum construction. In the process, the analysis undertaken is not cursory but conscientious. This would equip readers with the key moments of larger debates surrounding the curriculum-building process for a state's school education system. This approach would enable a meaningful connection to broader global trends in curriculum development.

Taylor (1975), a major theoretician on curriculum in its modern sense, presents a rigid and hierarchical approach to curriculum construction. Despite its traditional orientation, Taylor assigns a seminal role to students in curriculum development and exhorts teachers to engage students creatively in the curriculum construction process. This study is significant as it argues that the sustenance of student engagement in school-level curriculum construction will be a highly acknowledged method that can be copied by any agency in the field.

Aloki (1993) views curriculum as a lived experience in the classroom as opposed to the static view of it. Curriculum, for Aloki, always maintains a special space for the "otherness of others". Freire (1993) debunks the banking mode of education and presents a radical

alternative in his libertarian education, where students have key roles in engaging with and addressing various issues affecting society, which in turn would positively impact their consciousness and worldview. The Kerala school education system significantly took forward Aloki's (1993) and Freire's (1993) views on curriculum construction and implementation to build a new approach.

Freire (1993) challenges the projected binary roles of teachers and learners by re-imagining them as simultaneously being teachers and students during the active learning process in problem-posing education. Eisner (2003) focuses on the roles of students in curriculum design and implementation. He conceives a renewed role for students in formulating objectives for their studies and materialising them collaboratively within the classroom. He also expresses concern about how the pressure of assessment expectations adversely impacts the pedagogic procedures of teachers, and the genuine needs and aspirations of students. The conceptual framework of Eisner's ideals in the curriculum construction process is envisaged in Kerala's school education system to engage students in the process of developing the curriculum. Besides the vibrancy of debates about engaging students in the curriculum-building processes, two academic positions are popular about this progressive step. The first is related to the nature of education, while another concerns the academic confidence about students' participation. Research focusing on the positive outcomes of the process is relatively new and scant in academic circles. Studies on University education (Klein & Kuh, 2006; Alber, 2009) have extended the benefits of better learning and engagement to enhanced learning outcomes like critical thinking skills among students. Educationists, over the years, have become more sensitive about the exclusion of students' voices in curriculum construction. Thomson (2009) reflects on this issue, stating: "Through mass education, children became passive and just docile recipients of adult knowledge."

Levin (2000) posits that learner agency, common goal and teamwork in school settings would lead to significant achievements, similar to those seen in global work settings. Ruddock and Flutter (2006) argue that if students are not connected to the curricular objectives of a programme, they may become barriers through destructive practices. Koning, Saskia and Jeroen (2010) caution that if children are unable to communicate their perceptions on teaching and instructional changes, their achievement levels will be severely impacted. Their research, conducted in school settings, provides valuable insights into the whole process. Crawford and Kunjack (1998) conducted an educational research on middle school students. The researchers found that when students initiate a task, it increases their interactions, productivity, sense of responsibility and ownership. It was also found that real-world questions energised students more than typical topic-bound questions. Thomson (2009) studied teachers' perception of the process and identified three types of teacher roles—proactive, managerial and constrained, based on their attitude towards the classroom process. Thomson (2009) also observed that students were more comfortable with active, reciprocal and managerial teachers, as they were able to build genuine trust and relationship with students.

The education department at the University of Alberta, Canada, (Alberta Report, 2008) launched a series of innovative programmes under the Inspiring Educational Initiative to incorporate students' views on the curriculum process. As part of this initiative, the education department launched a website called 'Speak Out', designed exclusively for students to express their views and aspirations regarding the proposed curriculum. Besides, focus group discussions with students were also given due importance in the curriculum reconstruction process. But despite all these interesting initiatives, the education department was criticized for failing to materialise students' debates and insights

in the form of a template for curriculum planning at the University of Alberta. This evaluation of the Alberta initiative raised concerns about pursuing similar research. It emphasised that valuable insights shared by students and their active involvement could enrich the construction processes and improve the curriculum.

Scope of Student Participation in Curriculum Construction Processes

The presentation of ideas by key scholars and major studies conducted in this area do not mean that the process of student engagement in curriculum construction is smooth and hassle-free. Many issues abound that need to be addressed at the earliest. The first relates to the clarity and definition of the phrases 'student participation' and the 'stakeholders' expectations of students and teachers'. Thomson (2009) posits that teachers should view students as capable and respectable. Mitra and Gross (2009) endorse Thomson's view by saying that if teachers' voice is artificial and the school does not have a policy of respecting children, students will become alienated and disengaged. The second issue is systemic, as the present system of education and training programmes for teachers are not adequate to equip teachers to support students in participating in the curriculum development processes.

Besides, the poor system and weak communication of expectation, students themselves sometimes contribute to the complexity of the issue. Their predilections for surface learning over deep learning often makes them to view the entire process as cumbersome. Crawford and Kunjack (1998) reiterate this concern, stating, "University education enables students to have a philosophical understanding of education, but when they set in the school context, they come to be carried away by other external expectations in the form of high stake standardized examinations."

The history of curriculum development in Kerala, especially over the last few years,

reflects a slow but gradual initiative to equip students to participate in the complex process of curriculum construction. Various theoretical insights, key research findings, practical experiences in the state and academic guidelines of the National Council of Educational research and Training (NCERT) have enabled Kerala's education ministry and teachers in the state to invest in this student-oriented initiative. A series of learner-friendly initiatives were pioneered in all previous curriculum-building processes in the state.

Objectives of the Study

After acquiring knowledge about curricular experts, who have emphasised student participation in curriculum building, and some key studies presenting the advantages and challenges involved in this innovative procedure, this research proposes to study student participation in the curriculum-building process in Kerala. Following are the objectives of the study.

- To examine the grassroots-level approaches for curriculum construction in Kerala state school education
- To assort the suggestions and experiences of students as curriculum constructors, and explain them for the benefit of the school education academic circle

Methodology

The information and data to realize the objectives were collected by administering three methods and materials. The data collection was carried out using field notes and focus group discussions. Each focus group, comprising students and teachers, had six participants.

This curriculum development team of the State Council for Educational Research and Training (SCERT), Kerala, is responsible for monitoring the curriculum construction processes conducted in schools, block-level resource centers, district-level centers, and SCERT itself. As part of their work, the researchers visited certain centers and

schools where the curriculum construction processes were being carried out. The field experiences were recorded and compiled as field notes. The precise content in these field notes serve as material used for the analysis. The SCERT, with the help of the Department of Education, Kerala, posted trained teachers at schools and cluster sessions to activate and monitor the curriculum development and transaction procedures. They were designated as supervisors for the programme. Their responsibilities included maintaining a report of each day's work and observing developments in the field. These reports were collectively called 'supervisor descriptions'. For the present research, 12 supervisor descriptions were used.

Procedures of Information or Data Collection

This longitudinal study organised information from different sources collected between 2013 and 2023. The data collected by the researchers, based on their efforts with SCERT and District Institutes of Educational Training (DIETs), Block Resource Centres (BRCs) and schools, was supplemented with information from other sources. The respondents included resource teachers, supervising teachers and students. These groups maintained data on the variables, though not initially for research purposes.

The resource teachers were responsible for conducting orientation programmes at different levels, collecting responses and preparing reports on the process to ensure grassroots-level contributions to curriculum construction. The supervising teachers were responsible for conducting such orientations and discussions at schools. Besides, they also had to prepare reports to be submitted to higher authorities. This academic work provided them the experience of orienting students, enabling them to contribute towards enriching the school curriculum. Their experiences were collected as field notes for this study.

Additionally, focus group discussions with students and teachers were conducted

separately, and the information gathered was utilised to avail the result of the research. These discussions aimed to accumulate and organise the views of students on the proposed curriculum. The insightful suggestions provided by the students gave impetus to several path-breaking transformations in Kerala's educational landscape.

The focus group discussions were conducted at two government schools—GG Higher Secondary School, Chalappuram-Kozhikode, and GHSS, Kattilangadi, Malappuram. Most students in these schools come from lower socio-economic backgrounds, while a significant portion belongs to economically moderate and upper strata of society. Since GGHSS, Chalappuram, is situated in the heart of Kozhikode city and GHSS, Kattilangadi, is located in a village in Malappuram district, the sample included students representing both rural and urban regions. The views expressed by the students in the focus group discussions were used in excerpts to define and interpret the accumulated data.

As mentioned above, field notes from 12 supervising teachers were considered for the analysis. The field notes serve as a type of record of minutes documenting the conducted processes. They explain the teachers' experiences during the curriculum-related academic sessions conducted to collect students' opinions. The sessions were organised by teachers as directed by the Department of Education, Kerala. During these sessions, the teachers engaged in participatory observation, documenting students' responses from the purposely conducted discussion programmes, informal discussions, interactive opinions and common viewpoints. As resource persons for SCERT, Kerala, the researchers participated in various workshops in different parts of the state. These workshops provided them the opportunity to interact with many teachers, who shared their insights, which helped the researchers broaden their perspectives regarding student participation in the curriculum construction process.

The student orientation for collecting information regarding curriculum construction and transactions began in 2013. The then state government decided to collect the views of students on the proposed draft curriculum document, allotting two periods in all schools of Kerala, from -2 to +2, using specially designed student-friendly materials. There were certain stipulated programmes to implement this strategy of collecting student information. They were as follows.

- Class teachers and their assistants conducted class-level workshops to collect students' opinions and suggestions. These teachers were trained by educators who, in turn, were trained by SCERT and BRCs at the grassroots level.
- The ideas generated at the school level were reviewed by BRC- and district-level meetings before being submitted to specially constituted focus groups working in various areas, including language and mathematics education. Despite initial apprehensions regarding the fitness of students for this task, the participating students made interesting suggestions during the discussion.
- Resource persons at the BRC level organised workshops for students both at the school and BRC levels. These workshops provided students with opportunities to submit suggestions and opinions to reframe or restructure the elements of the curriculum designed for them.

The field experiences of these teachers were analysed to prepare the output of this research.

Analysis and Findings

The information collected from field notes and reports of focus group discussions were analysed qualitatively. The information collected reveal the following.

- The students were supportive to grassroots-level curriculum construction. They provided suggestions to draft the curriculum.

- The BRCs could effectively orient the curriculum construction processes at the grassroots level.
- The policies regarding school subjects, content orientation, syllabus formation and methods of teaching were discussed at the grassroots level, and suggestions were formulated.
- The teachers and students were enthusiastic to contribute creative suggestions for designing the curriculum.
- The grassroots-level suggestions focused on the syllabus for teaching arts, sports and fine arts; the need for vocational training; language teaching; teaching quality; and teacher-student relations.

The excerpts based on the information gathered from the focus group were used to trace the specific findings. The contents of the field notes are assorted into four titles: (a) suggestions regarding activities of students like sports, arts, scientific exhibitions, soft skill development and personality development (b) content orientation (c) methods of teaching and (d) school atmosphere and morale.

The analysis of the collected information helped the researchers assort the students' suggestions on curriculum construction. These suggestions revealed that students have the potential to contribute to the development of the school curriculum. The analysis of field reports from teachers and curriculum constructors illustrated that grassroots-level approaches to curriculum construction in Kerala state schools are effectively implemented in the academic process.

Excerpts

When the tentative proposal for a gender-neutral uniform and gender equality sparked a storm in Kerala's social sphere in the years 2021 and 2022, attracting the attention of national dailies, students were hesitant about proposing not only gender equality but also the need for comprehensive

sex education in schools. This issue was discussed in the focus group with students at the school level. The participants in the focus group unanimously suggested the need to include sex education and gender equality in the school curriculum. Some students even sought menstrual leave for girls, as practiced in progressive societies. Some of the suggestions proposed by the students are as follows.

- The existing course books are designed with teacher orientation, creating academic challenges for students. Hence, the learning material must be rewritten, keeping students as the center of the teaching-learning process.
- Schools should be transformed into a happy space for students, allowing avenues for all to grow and flourish, irrespective of their social, economic and cultural backgrounds.
- Rather than focusing solely on the theoretical framework of pedagogy within a curriculum framework, teachers must address complex pedagogical issues in a simple and clear manner. They should be entrusted with the responsibility of pedagogic integration, rather than centralising it within the curriculum.
- The concern of underperforming students was significant, and they were dissatisfied with the way teachers treated them in classroom. The surveyed students expressed unhappiness with the practice of isolating underperforming children and labeling them in the guise of remedial and special support programmes organised in schools.
- Teachers must be equipped for conducting classes in this digital era. They should be provided adequate training programmes.
- Teachers need to acquire technological knowledge and apply it in the classroom to ensure effective teaching.
- Students should be allowed to use technological devices in classrooms, with learning opportunities provided through technological and computer-assisted tools. The prohibition on using mobile phones in schools must be diluted, and

students should be given the opportunity to use mobile phones for learning purposes during classes.

- Students should be given the opportunity to prepare and submit assignments, homework and such related tasks online.
- The students opined that learning the scientific names of plants and animals is not necessary. Instead, the syllabus should focus on explaining what scientific names are, their significance and relevance. Students can learn the scientific names on their own later. There is no need to include questions about these in exams. Students in the focus groups opined that learning the scientific names of plants and animals is a redundant exercise. Hence, the content in the syllabus of science subjects must be modified.
- The students felt that the topic of trigonometry in mathematics was dull and stand-offish. They suggested that appropriate changes be made to the mathematics content so that it can be understood by students more smoothly.
- They opined that English language learning should focus on communication rather than literature. Communicability should be the focus of learning English and Hindi, in particular. Malayalam should be given importance in literature.
- Kerala's Department of School Education organises a variety of extracurricular activities at the school, educational district, revenue district and state levels. The activities include cultural days, science and social science programmes, athletic competitions and art festivals. However, these programmes minimise the significance of academic pursuits, serving only a small number of students. Moreover, some teachers devote more time to these activities, affecting the effective functioning of schools. The students feel that the school administration should prioritise academic activities during regular school hours. Extracurricular activities at the state, revenue and educational district levels should be

scheduled only during school breaks or holidays. Besides, schools must ensure that academic activities and school working days are not interrupted by the schedule of extracurricular activities.

- The new generation of students is dissatisfied with the existing evaluation procedure used by teachers to assess them. They feel that the existing assessment regime gauges their competence in a narrow and restricted manner.

Conclusion and Generalisations

Kerala's Department of Education has published a volume of documents on students' discussions on the curriculum draft, along with KCF 2023. It has also decided to use it as a benchmark for learning material developers and for evolving a strong institutional mechanism to ensure that textbook and other curricular material developers adhere to the philosophy and principles of KCF 2023.

The curriculum must be learner-centered and students are the focus in the classroom. These concepts emerged from discussions with students. Learner-centered classrooms provide space and voice to students, but the notion of a learner as a curriculum developer has challenged traditional beliefs about learning outcomes, materials, methods and evolution procedures employed in the classroom. This, in turn, empowered the students both as learners and as individuals. The study enabled the researchers to explore and experience the intersection of theory and practice in academic settings. While students may not be equipped to prepare a curriculum framework at the school level and the academic community need not expect this from them, it is amazing that students, as the grassroots of educational processes, can contribute innovative, learner-friendly, socially-oriented and academically-enriched addenda to an already drafted curriculum. This needs to be acknowledged by educational administrators and policymakers.

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Green Schools: Integrating Sustainability in School Curriculum

Tisha Goswami*, Ansar Ahmad**

Abstract

Education plays a crucial role in disseminating the meaning of sustainable development. It addresses the integration of all dimensions of sustainability, i.e., social, environmental, cultural and economic. Therefore, it is important to include Education for Sustainable Development (ESD) at all levels of education across the world. ESD leads to the holistic development of learners, and also prepares them to understand and respond to diverse scenarios related to sustainability. Therefore, it becomes important to understand how deeply ESD is implemented in schools to transform them into green schools.

For this study, a sample of 90 teachers and 18 principals teaching at the middle stage of schooling was purposively selected from 18 Delhi schools. Checklist, open-ended questionnaires and semi-structured interviews were used to collect data for the mixed-method approach. The findings revealed that majority of the schools faced challenges in incorporating ESD into the curriculum and had insufficient facilities to qualify as green schools. Moreover, teachers need to take more initiatives to urgently integrate sustainable development into the teaching-learning process.

Therefore, it is essential for schools to integrate ESD into their curriculum to create green schools, a necessity in this globalised world. The study concludes that ESD is an important effort to rethink about the education system at various levels, thereby contributing to building sustainable societies.

Keywords: Education for Sustainable Development (ESD), green schools, teaching-learning process

Introduction

According to the Report of the World Commission on Environment and Development: Our Common Future, sustainable development is needed so that the present and future generations can fulfil their basic needs without any compromise (UN Secretary General and WCED, 1987). Moreover, sustainable development is a balance of three dimensions, namely, environmental, economic and social. To achieve development in these dimensions, the United Nations (UN) set eight Millennium Development Goals (2000) on the then

emerging global issues and challenges. When the targets were not achieved by 2015, it set 17 Sustainable Development Goals (SDGs) to be achieved by 2030 for global development (UN General Assembly, 2015). In the United Nations Decade of Education for Sustainable Development (2005–14), ESD was referred to as a revolutionary idea for spreading awareness and education, including training the public to be aware of the connection among different issues of sustainable development (Buckler & Heather, 2014). It also focused on developing knowledge, skills, behaviour, and inculcating values in society that would empower all individuals to show

their responsibility for making the future sustainable for all (UNESCO, 2014).

Sustainable development should not be looked upon as a new programme but as a concept that needs to be integrated in the ongoing educational programmes, as education is the key in building the capacity of society to work together and build a sustainable future for all (Timm & Barth, 2021). Thus, integrating topics related to ESD into the curriculum prepares learners to understand and respond to diverse issues. Moreover, ESD is the prerequisite to promote schools in stimulating learners to reflect on their own lifestyle and find sustainability issues (Gough & Scott, 2003). A school that promotes environmental sustainability and caters to the holistic needs of learners is referred to as a Green School (Sharma & Pandya, 2015). Also, in a green school, the focus is on the content, learning outcomes, pedagogy and school environment, which leads to the effective implementation of ESD (UNESCO, 2014). Overall, it can be said that a green school is one where ESD is integrated into the educational activities to promote knowledge and skills for social, economic, cultural and environmental dimensions of sustainable development (UNESCO, 2023).

To impart sustainable literacy and become a green school, a process-oriented approach with emphasis on experiential learning is crucial for learners. All subjects, including science, social science and language, have the capability to promote ESD during the cross-curriculum processes in schools (Sund & Niklas, 2020). The syllabus, when localised by incorporating more nature-related lessons, along with their transaction during classroom engagement, helps learners acquire knowledge about their surroundings and find solutions to make it sustainable (Kuo, et al., 2018). Teachers and the school environment are critical agents in the twenty-first century to equip the young minds with knowledge that helps build a sustainable society (Ferguson, et al., 2021). Consequently, educators need to possess sustainable development competencies to

instill them in learners. Also, they should be capable of aligning these competencies with their pedagogical practices (Rieckmann & Barth, 2022).

In India, the Right to Education Act (2009), along with major educational reforms, policies and schemes, started by the NITI Aayog, were not satisfactorily implemented. Besides, the curriculum followed by educational institutions did not align with the necessities of society, and the teaching-learning process was not conducted in accordance with the National Curriculum Framework (2005). Additionally, there was no monitoring of the functioning of schools, and the use of outdated pedagogy resulted in an unsustainable education system in India (Mohanty & Dash, 2018). In alignment to this, it becomes necessary to incorporate ESD into the school curriculum in India. Furthermore, the SDGs, which are an integral part of ESD, are built on global priorities that need to be adopted by every government and educational institution in a modified way catering to the national and localised requirements (Kioupi & Voulvoulis, 2019).

Significance of the Study

Children are the future of every nation, and contributors to change and transformation once they become aware of their responsibilities. When they start understanding the need for sustainable development from an early age, they gain more knowledge and develop various skills to participate in sustainable development activities globally.

ESD empowers learners to take responsible actions for promoting economic feasibility, environmental solidarity and social justice, so that all generations can live in harmony (UNESCO, 2020). This can be achieved by adopting sustainable development practices by schools. Also, by building a common vision based on localised sustainable practices and utilising learner-centric pedagogical approaches, educators can help the nation

achieve SDG 4. The National Education Policy (NEP) 2020 emphasises environmental education, sustainable lifestyles, sustainable reform and promotion of SDG 4, i.e., quality education (Ministry of Education, 2020). Furthermore, green schools are essential to achieve Target 11.7 of SDG 11 (Sustainable cities and Communities), which aims to provide universal, safe, green spaces that are inclusive and accessible for children by 2030 (UN General Assembly, 2015).

The National Curriculum Framework for School Education (2023) was released 18 years after the National Curriculum Framework (2005), incorporating a major upgrade, focusing on the holistic inclusion of all aspects of sustainable development in the school curriculum to achieve the SDGs. Drawing inspiration from this, it is essential to update all other policies, programmes and curricula related to school education to genuinely integrate the concept of ESD, considering the demands of the global society. Against this backdrop, it is essential for all stakeholders, including teachers, teacher-educators, policymakers and curriculum developers to reflect on the relevance of ESD in this rapidly evolving world and acknowledge its need.

The paper, therefore, aims to study ESD and its integration into the curriculum to create green schools. Consequently, it provides insight into ESD to transform every school into a green school, which would help the school community undertake various initiatives through the teaching-learning process.

Operational Definitions

Education for Sustainable Development: It implies empowering middle school students through education gained from schools to be capable enough of thinking critically and taking actions for a sustainable future.

Curriculum: It relates to the overall educational experience, including the subject matter, for the holistic development of students at the middle stage of 18 schools of Delhi.

Green schools: These refer to schools where ESD is integrated into the curriculum to educate students about social, economic, cultural and environmental sustainability.

Objectives of the Study

1. To study the facilities available in 18 Delhi schools to transform them into green schools
2. To study the initiatives taken by the schools to promote sustainable development in the teaching-learning process
3. To study the challenges faced by the school authorities to transform their schools into green schools

Methodology

The researchers employed mixed method of investigation. The sample comprised 18 schools from Delhi. Of these, five were private and 13 were government schools. A total of 108 samples, comprising 90 teachers and 18 principals teaching at the middle stage in the schools of Delhi, were selected using purposive sampling technique.

The responses were gathered using tools like checklists, open-ended questionnaires and semi-structured interview schedules. These tools were developed by the researchers and validated by experts. A checklist was employed to study the facilities available in the schools for creating green schools. Questionnaires were employed to study the initiatives taken by the schools to promote sustainable development in the teaching-learning process. The semi-structured interview schedule aimed to study the challenges faced by the school authorities in making their schools green.

Results and Discussion

Objective 1: To study the facilities available in 18 Delhi schools to transform them into green schools

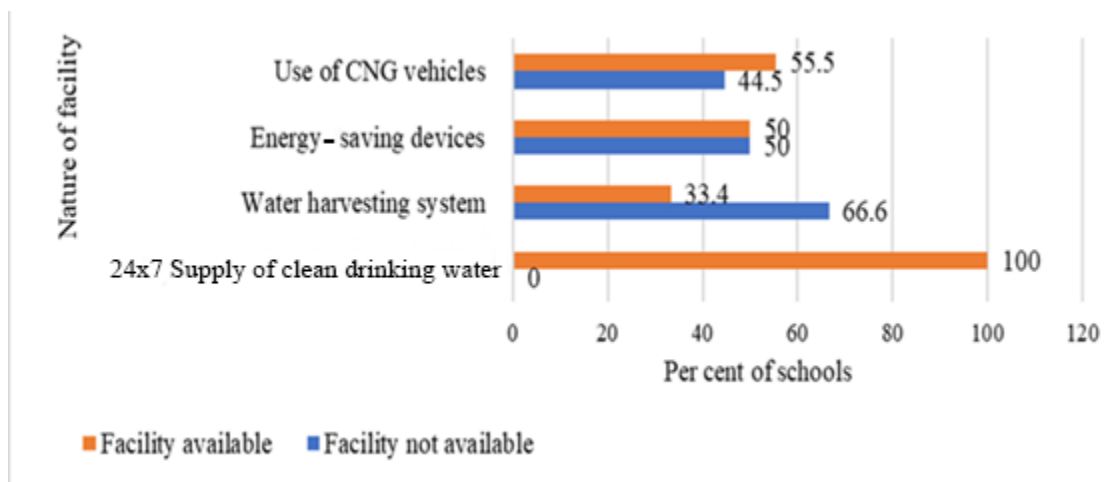


Figure 1: Facilities available to conserve the environment and sustain its well-being

Figure 1 indicates that 55.5 per cent of the schools ensured that all means of transport, whether owned or hired, strictly operated on CNG and were available to learners and staff members travelling over 5 km distance. On the contrary, the remaining 44.5 per cent schools did not provide transportation facility to their learners or staff members. Half of the schools had power backup systems, such as energy-saving devices or solar plants, whereas the

remaining lacked energy-saving devices or power backup. Two-third of the schools had not installed rainwater harvesting system and often experienced waterlogging on campus. The remaining one-third schools had a rainwater harvesting system to conserve water, with no means of storing stagnant water. To ensure access to clean and healthy drinking water, all schools maintained 24×7 water supply and drinking water system.

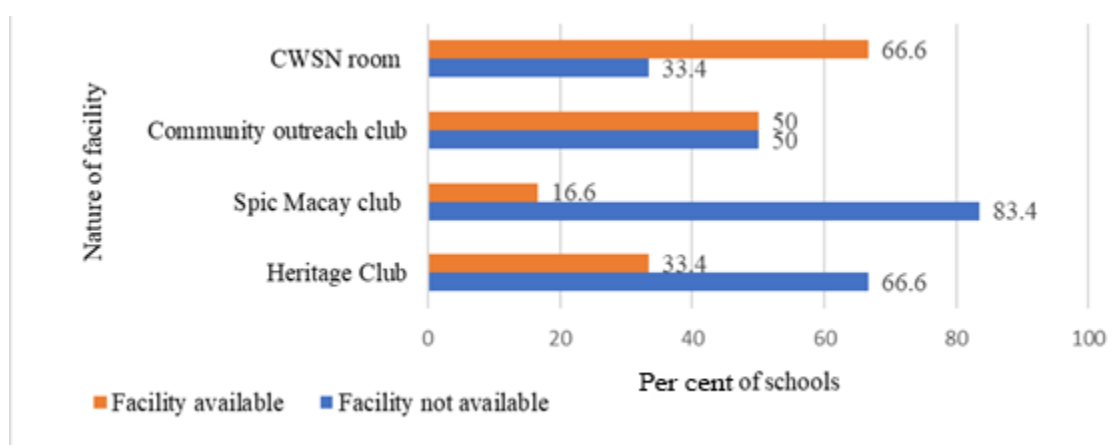


Figure 2: Facilities available to integrate sociocultural heritage

Figure 2 illustrates that two-third of the schools had separate rooms for Children with Special Needs (CWSN), along with the provision of inclusive regular classroom studies. In contrast, the remaining one-third schools lacked separate rooms for CWSN for one-on-one guidance, along with inclusive education. Half of the schools had community outreach clubs, allowing learners to inculcate the values of serving the society and participate in school activities for better educational outcomes. On the contrary, the other half did not have

community outreach clubs and experienced minimum community participation in school activities. It was found that 83.4 per cent schools did not have a Spic Macay club, whereas the remaining 16.6 per cent had one to help learners imbibe traditional Indian classical culture and share their learnings with future generations. Furthermore, two-third of the schools did not have a heritage club, whereas the remaining one-third had a heritage or similar club that focused on preserving the past glory of the country and the world.

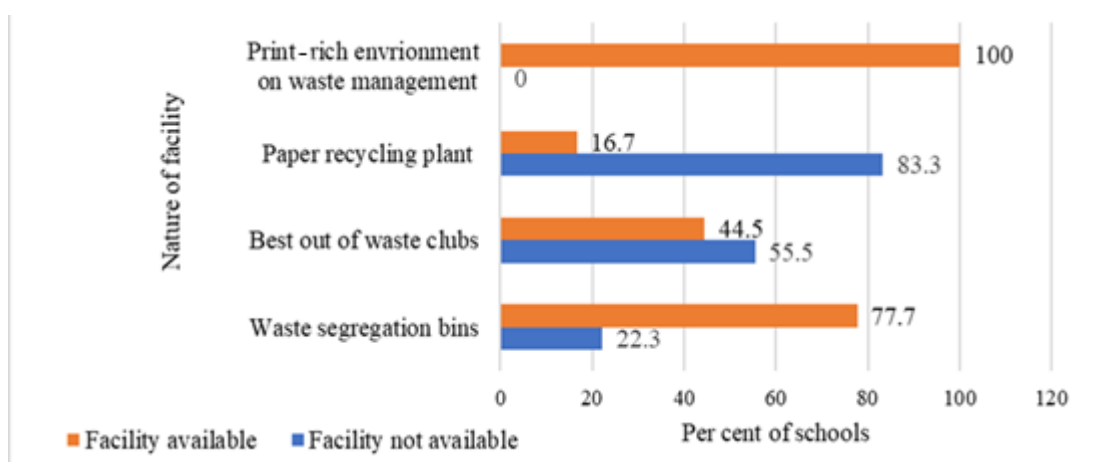


Figure 3: Facilities available to sensitise on the need of waste management

Figure 3 suggests that all schools had a print-rich environment, with posters displayed across the premises to make the learners aware of waste management and its importance. It was found that 83.3 per cent of the schools did not have paper recycling plants or any other recycling provision. The remaining 16.7 per cent schools had paper recycling plants, where used notebooks, waste or rough pages, and old newspapers were collected by learners and teachers

for recycling. Additionally, 55.5 per cent of the schools did not have 'best out of waste' clubs, whereas the remaining 44.5 per cent had such clubs to create innovative things from waste materials. Furthermore, 77.7 per cent of the schools had green and blue dustbins for the segregation of biodegradable and non-biodegradable waste, respectively, whereas the remaining 22.3 per cent used common dustbins to throw all kinds of garbage.

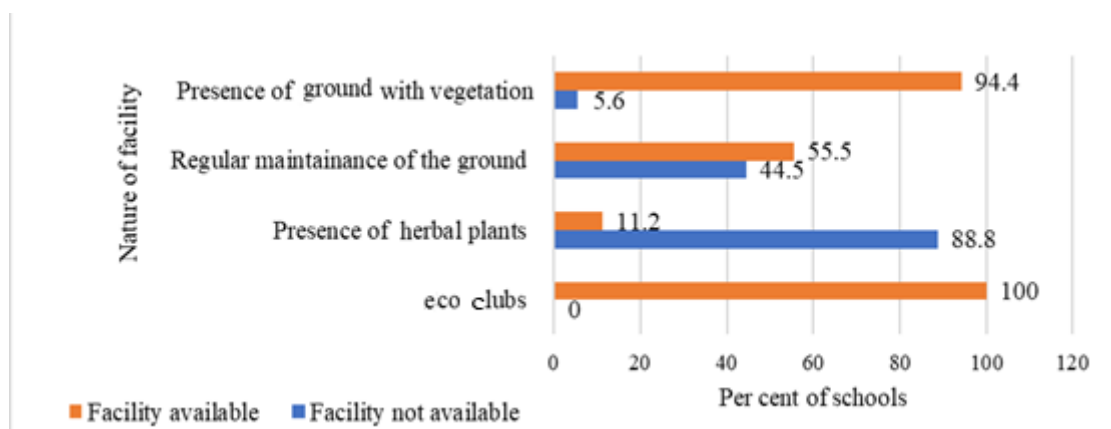


Figure 4: Facilities available to protect the natural environment and biodiversity

Figure 4 shows that majority of the schools (94.4 per cent) had grounds with a variety of plants, insects and birds, whereas the remaining 5.6 per cent lacked flora or fauna on their premises. In 55.5 per cent of the schools, learners looked after the plants and were encouraged to take responsibility of maintaining the school ground. In contrast, the remaining 44.5 per cent schools either lacked a ground or depended exclusively on the gardener for its maintenance.

Approximately, 88.8 per cent of the schools did not have herbal plants, whereas the remaining 11.2 per cent had herbal plants or a herbal garden. These were maintained for medicinal purposes and to educate learners about the properties of these plants through experiential learning. Furthermore, all schools had eco-clubs to empower learners to participate in environmentally sustainable activities and spread about environmental sustainability in society.

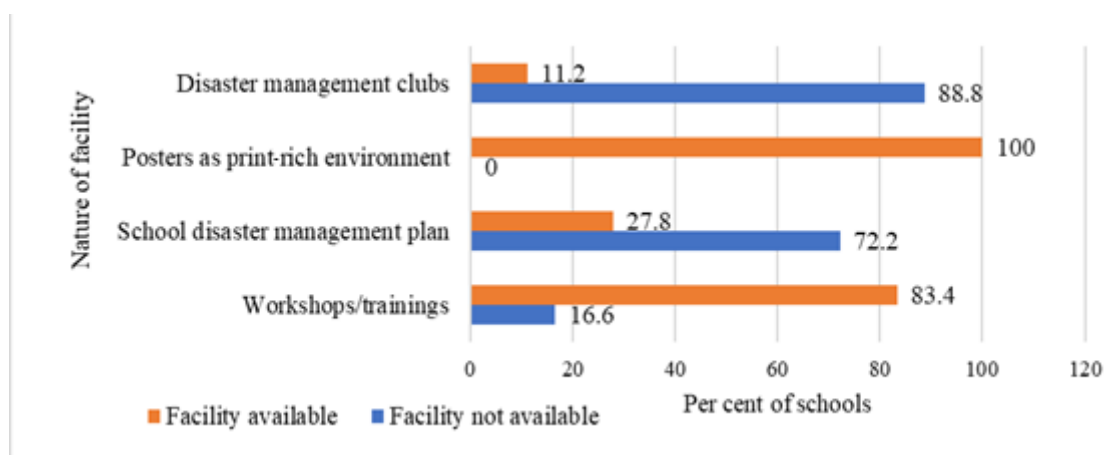


Figure 5: Facilities available for tackling emergency situations

Figure 5 demonstrates that 88.8 per cent of the schools lacked disaster management clubs or societies, whereas such facilities

were present in the remaining 11.2 per cent schools. All schools displayed posters highlighting emergency situations and

evacuation methods, along with emergency contact numbers for immediate action. A total of 72.2 per cent schools did not have a school disaster management plan, whereas the remaining 27.8 per cent had fire safety systems, along with evacuation and contingency plans, included in their school disaster management plan. Additionally, 83.4 per cent of the schools regularly conducted National Cadet Corps (NCC) training camp focused on basic skills of survival and

emergency response during disasters. These schools also conducted regular mock drills, and invited experts to train learners and teachers on how to tackle emergency situations. In contrast, the remaining 16.6 per cent schools either never or infrequently conducted disaster-related workshops or training programmes.

Objective 2: To study the initiatives taken by the schools to promote sustainable development in the teaching-learning process

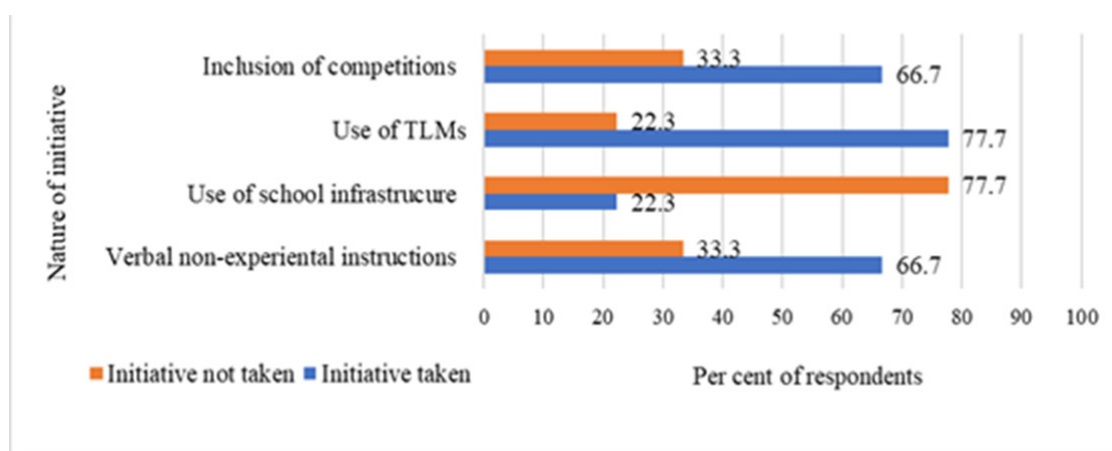


Figure 6: Initiatives taken to conserve the environment and sustain its well-being

Figure 6 shows that two-third of the teachers expressed that learners participated in competitions on conservation and its need, whereas the remaining one-third did not include competitions on conservation in their teaching-learning process. Nearly three-fourth of the teachers (77.7 per cent) used different kinds of TLMs, such as posters, flashcards, poems, case studies, interactive charts, videos, role-play and stories of people living in places without water or electricity, to sensitise the learners about using these resources efficiently. Additionally, 42.8 per cent of the teachers admitted using real-life experiences by intentionally removing certain facilities from the school for a short duration to make the learners realise the difficulties they might face when these resources are exhausted in future. The

remaining 22.3 per cent of the teachers did not use any kind of TLM to teach the learners about the conservation of resources, apart from those mentioned in the prescribed textbooks. Approximately, three-fourth of the teachers (77.7 per cent) did not use the available infrastructure in the teaching-learning process, while the remaining 22.3 per cent used solar panels and rainwater harvesting plants present in their schools to teach about their parts and functions by providing experiential learning. Two-third of the teachers used lecture method to give verbal instructions without incorporating experiential learning in the classroom, encouraging the learners to adopt habits that can reduce wastage and save resources for future. On the contrary, the remaining one-third prioritised experiential learning.

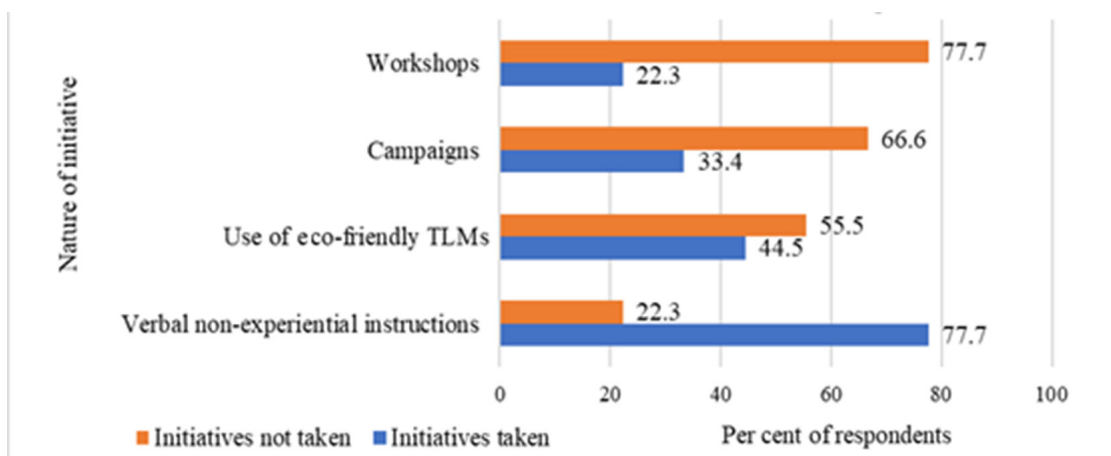


Figure 7: Initiatives taken to sensitise learners about waste management

As observed from Figure 7, 77.3 per cent of the teachers did not use the available infrastructure in the teaching-learning process, whereas the remaining 22.3 per cent conducted workshops involving no-cost experiments to promote hands-on experiences or manage waste by recycling materials. Two-third of the teachers did not include class-level campaigns, nukkad natak or role-plays in their teaching-learning process, whereas the remaining one-third mentioned conducting campaigns on topics like 'Say no to plastics' and cleanliness drives, along with nukkad natak and role-plays to spread awareness and sensitise learners and community members towards the protection of environment.

Additionally, 55.5 per cent of the teachers either did not use any TLM or eco-friendly material to create TLMs to sensitise learners on the importance of waste management. On the contrary, the remaining 44.5 per cent of the teachers used eco-friendly TLMs by making best out of waste material, i.e., preparing recycled or low-cost material, to teach various concepts given in the syllabus based on environment-friendly practices. Lastly, 77.7 per cent of the teachers relied on verbal instructions using the lecture method to develop the habit of waste management in the learners, whereas the remaining 22.3 per cent believed only in experiential learning, where learners explore and learn on their own with some facilitation.

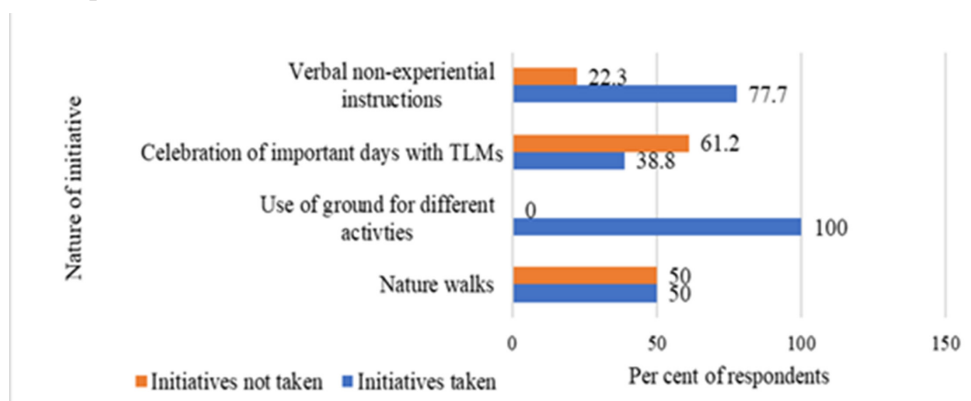


Figure 8: Initiatives taken to protect the natural environment and biodiversity

Figure 8 illustrates that 77.7 per cent of the teachers relied solely on verbal instructions and the lecture method to encourage learners to protect the natural environment and biodiversity, whereas the remaining 22.3 per cent believed in experiential learning, where learners could explore and learn on their own with some facilitation. A total of 61.2 per cent of the teachers did not celebrate important days during the teaching–learning process, whereas the remaining 38.8 per cent celebrated important environment-related days and prepared lesson plans to emphasise their relevance in the classroom.

All teachers opined that the use of the school ground to organise assemblies, functions and daily sports activities was necessary. Half of the teachers included nature walk in their teaching–learning process to encourage learning by doing and used the ground as an open classroom to instil an appreciation of the nature’s beauty and the need to protect the biodiversity. But the remaining half preferred teaching within the classroom premises due to constraints like big class size, small ground or unfavourable weather conditions.

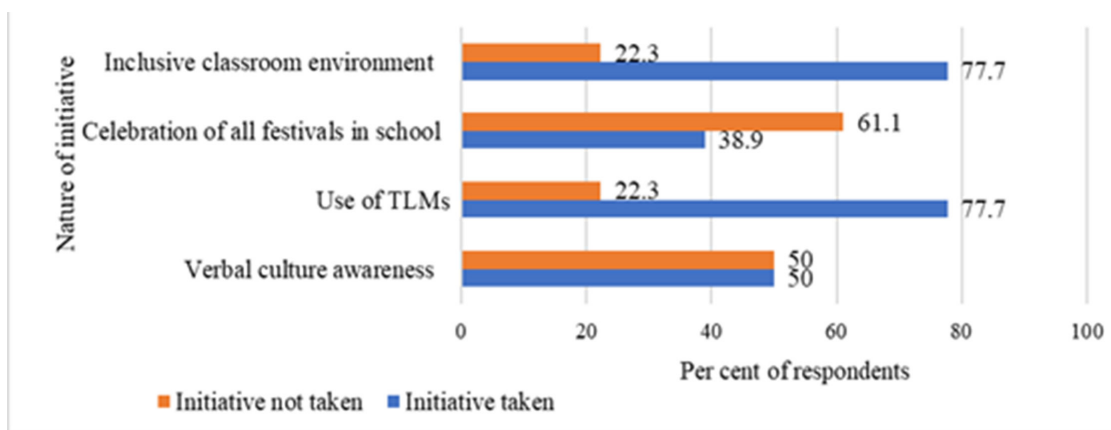


Figure 9: Initiatives taken to integrate and preserve the sociocultural heritage of learners

Figure 9 shows that 77.7 per cent of the teachers took responsibility for making their classrooms inclusive in terms of gender, culture and disabilities, whereas the remaining 22.3 per cent taught in schools that were either only for boys or girls or had large class sizes, making it difficult to focus on every learner. Additionally, 61.1 per cent of the teachers did not prepare a separate lesson plan based on festivals, whereas 38.9 per cent ensured celebrating every festival by creating specific lesson plans. Approximately, three-fourth (77.7

per cent) of the teachers admitted using TLMs like posters, storybooks, charts, role-plays, audio and visual aids, etc., to spread awareness on different cultural practices and their traditional sustainable practices. The remaining 22.3 per cent relied on textbooks and lecture method for teaching. Half of the teachers made sure to be aware of the cultural practices of each learner in the classroom by verbally engaging with them, whereas the other half were not familiar with the cultural practices of their students.

Objective 3: To study the challenges faced by the school authorities to transform their schools into green schools

More than half of the principals shared that they faced challenges in transforming their schools into green schools, while the rest stated that they encountered no challenge and were satisfied with the present situation. Half of the principals expressed difficulty in sensitising learners on sustainability issues because of their low socio-economic background. Approximately, one-third of the principals pointed out lack of motivation and interest among teachers and learners to participate in sustainable development activities due to rigid timetables. Two-third of the principals indicated that schools lacked the required infrastructure to implement sustainable practices. Around one-fourth of the principals gave up on the idea of constructing sustainable facilities due to the cumbersome process of budget approvals, whereas three-fourths of them expressed the need for an official circular from higher authorities to take up such activities. About half of the principals mentioned a shortage of teachers with relevant skills to incorporate and promote sustainable development practices in their schools. Approximately, three-fourths of the principals found it difficult to convince community members to take out time for helping learners in social causes.

Conclusion

A diversity of equipment and devices were present in the schools. But for a school to be called a green school, it is essential that

it has sufficient infrastructural facilities to promote ESD. In terms of a child-centric approach, teachers used different kinds of TLMs to promote experiential learning. However, most teachers relied on verbal instructions, focusing more on traditional approach of teaching. Although a variety of initiatives were taken in the schools, their overall performance was minimal. This shows that the teachers were not effectively incorporating activities to promote sustainable development. Majority of the schools faced challenges in integrating ESD into their curriculum. This highlights the need for stakeholders to be more sensitised towards ESD and work together by following a solution-based approach.

Therefore, it is suggested to conduct workshops and trainings programmes for both pre-service and in-service teachers on concepts related to sustainable development and their integration into the teaching-learning processes. Principals should conduct regular school environmental audits to identify initiatives required to transform their schools into green schools. It is recommended for the schools to develop a green school action plan and increase the participation of community members through a mutual benefit approach, involving experts to teach and train on sustainable development issues. Also, there is a pressing need for schools to follow the National Curriculum Framework for School Education and implement it in their curriculum. This will ensure the inclusion of ESD in its true spirit, addressing the demands of the present scenario effectively.

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Digital Education Initiatives: A Guide to Transformative Pedagogical Practices

S. Prabu Shankar

This paper focuses on the Digital India initiatives aimed at transforming the country's education system into a digitally empowered one by increasing digital literacy, upgrading instructional methods through the adoption of digital tools, and promoting and incorporating digital applications. Notably, the Digital India campaign has enhanced Internet access, improved e-services, expanded digital infrastructure, and fostered innovation in adopting newer technologies in the teaching-learning practices. Visible changes had taken over educational practices because of increased focus on digitally empowered instructional methods (Thomas, 2012). Major interventions are noticeable in the domains of Information and Communication Technology (ICT) infrastructure, creation, storage and access of digital education resources, as well as networking using telecommunication or satellite-based communication to enhance learning. Major developmental components of digital education initiative include the Digital Infrastructure for Knowledge Sharing (DIKSHA web portal, mobile apps, Chatbots), ICT labs, smart classrooms, e-content resources, creation of management information systems at various levels, especially in schools, Teacher Education Institutions (TEIs) and Higher Education Institutions (HEIs). The National Education Policy (NEP) 2020 proposes to establish the National Educational Technology Forum (NETF) to facilitate the unlimited exchange of ideas on multiple aspects of digitalisation of teaching and learning, as well as the digitisation of assessment, planning and administration. This paper explores the perspectives, policies and initiatives aimed at fostering innovation in the applications of digital technology to the teaching-learning process.

Keywords: Digital education initiatives, digital infrastructure, digital applications, learning management system, digital tools

Perspectives of Digital Education

The slogan 'Education is for all' has evolved into 'Digital Education is for all' in the present context, reflecting the priority bestowed by the Indian Government to developmental aspects. Ensuring that no one is left behind in terms of accessibility and adaptation of digital facilities is the key objective of the government's digital education policies. The recent G-20 framework for systems of digital public infrastructure aims at developing 'a shared set of digital systems' to drive digital development, digital innovation, inclusion, trust, competition, and respect towards human rights and fundamental freedoms.

This vision emphasizes that education plays a pivotal role in achieving these objectives. Digitalising education is the way forward by which all developments can be realised.

The focus on digital education, including the development of digital infrastructure and digital content, use of digital tools for capacity building to address educational needs at all levels, ensuring equitable access to technology, developing skills and competencies aiming at revolutionising education, is central to enhancing the quality of education and transforming the current educational system. The NEP 2020 envisions a comprehensive adaptation of digitalisation aimed at fostering the unique

capabilities of every student. The policy emphasizes the extensive use of technology in the teaching-learning process to remove language, accessibility and adaptability barriers, not only for mainstream students but also for physically challenged (divyang) students by the use of enabling assistive and immersive technologies which are as follows.

Extended Reality (XR): It represents the combination of both virtual and physical aspects of the setting to create immersive and interactive experiences. XR includes three main types of technologies, which are as follows.

- **Augmented Reality (AR):** It aims at providing experiences that are interactive in nature, combining computer-generated and real-world matter. These experiences majorly use sensory modalities, including visual, auditory, haptic and somatosensory inputs. It often uses a camera or a smartphone to add digital elements to a live view (Zeimer, 2020).
- **Mixed Reality (MR):** It consists of a mixture of digital and physical content, unravelling the spontaneously built 3D computer-generated content (Marr, 2020).
- **Virtual Reality (VR):** It provides a simulated experience with 3D displays offering an immersive experience of the virtual domain.

Haptic technology, also known as 'haptics', creates a sense of touch through vibrations, motions, or forces (Marr, 2020).

Blockchain technology is a type of digital ledger that allows for secure information sharing and transactions across a network.

Cloud computing allows accessibility of data and computing resources on a remote basis; cloud services include storage, networking, analytics and database management (Sunyaev, 2020).

Machine learning is a major component of Artificial Intelligence (AI), which focus on

constructing algorithms for computer-based systems towards efficient programming based on implicit constructs.

Fully immersive VR, Simulation is a technology that aims to transport users into a computer-generated, three-dimensional world that feels like reality (Zeimer, 2020).

Digital twin technology is a virtual model of a real-world object, system or process that can be used for simulation, testing, monitoring and maintenance.

Emphasis on Digital Initiatives

The Digital India campaign, a major flagship programme of the central government launched in 2015, focuses on transforming the society into a digitally empowered knowledge society. Its primary aim is to improve Internet connectivity and infrastructure, including 5G connectivity. The campaign concentrates on three key areas of development: (i) creating digital infrastructure for the benefit of citizens (ii) improving e-governance, and (iii) empowering citizens through digital assimilation. Furthermore, the nine pillars of the Digital India mission aim to create broadband access, universal connectivity, seamless Internet connectivity, effective e-governance and services, and electronics manufacturing with the goal of zero imports. They also focus on creating technology-based jobs, initiating e-trading platforms and partnerships, equipping citizens with digital skills, creating equitable societies through the provision of access to information (Suman, 2016).

The Digital India programme is a pioneering initiative by the Department of Electronics and Information Technology (DeitY) that focuses on improving digitisation to promote national development and opening new venues at all levels of education. The DeitY's digital programme initiative, Common Service Centers (CSC 3.0), aims to enable access to government e-services across rural areas, with regard to education in schools.

Universities are brought under the National Knowledge Network (NKN), which provides upgraded Wi-Fi, improved accessibility, developed digital infrastructure, and the creation of digital tools, among other enhancements.

The NEP 2020 initiates the use of digital platforms, e-teaching and learning resources, and also encourages digital-oriented curriculum from the primary to higher education level. It envisions to transform the education system into a robust, comprehensive and adaptive system that incorporates both digital and non-digital versions of technology.

- The National Educational Alliance for Technology (NEAT), an initiative of the National Educational Technology Forum (NETF), aims to bridge the gap between education and educational technology (EdTech) companies that develop online content, learning management systems (LMSs), and blended teaching-learning solutions, to name a few.
- Another significant initiative of NETF is the National Digital Education Architecture (NDEAR). The Ministry of Electronics and Information Technology (MeitY), Government of India, launched the Digital India programme to create a digitally empowered and knowledge society, bridging digital and socio-economic divides.
- The National Academic Depository (NAD) aims to provide facilities for storage, access, and retrieval of degrees and other significant credentials for academic institutions by validating their authenticity. The National Internship Portal maintained by the All India Council for Technical Education (AICTE), an online platform that provides internship opportunities to students and youth. It has been brought under the National Educational Technology Forum (NETF).

There seems to be a substantial change in the adaptation of ICT-based teaching-learning, with learning management software being widely adopted in the educational

system by institutions on a large scale and by individuals at all levels. However, issues of affordability, equitable access in adopting technology-based education—in view of the rural-urban divide, economic and sociocultural disparities, and accessibility challenges—pose major networking obstacles to its optimal adaptation.

Present Scenario of Digitalising Education

In the present scenario, the technology being adapted must support the goals of equitable educational opportunities that support sustainable development practices such as resource management, community engagement, curriculum development, artistic mediums, digital infrastructure which are founded on the values of equality, social and economic justice, and human rights (Mehrotra, 2022). Noteworthy instances of technology in previous decades aimed to expand access to knowledge and information, improve educational procedures, and enhance learning outcomes, making educational developments possible through ICT. However, these instances of development in education are often insufficient in terms of the progress occurring in related domains. Anantu (2020) highlighted that there are growing indications that the digital revolution in education comes with unacknowledged difficulties, possibly with new avenues in line with the technology revolution happening across education systems.

Here are some examples of digitalising education.

Online learning platforms: Courses are offered through online platforms across diverse subjects and levels in a flexible format, rather than conventional offline methods.

Virtual classrooms: Schools and universities are utilising tools like Zoom, Google Meet and Microsoft Teams to conduct virtual classrooms.

E-resources and libraries: These aim at substituting physical textbooks with e-books and digital resources, making them accessible through e-libraries and integrating them with platforms like digital reading devices, online book services and institutional digital repositories.

Adaptive learning technologies: Educational software and applications are increasingly using Artificial Intelligence (AI) to personalise the learning experience.

Remote assessment and proctoring: Technologies for remote assessment, such as online exams and AI-driven proctoring tools, ensure academic integrity, allowing secure testing environments outside traditional classrooms.

Collaborative tools for project management: These intend to facilitate collaborative online work culture among students and teachers with commonly available tools, namely, Google workspace and MS office, Trello, etc.,

Gamification and interactive learning: Gamified learning platforms incorporate game elements into educational content to increase students' motivation and engagement.

Remote laboratories and simulations: In fields like science and engineering, virtual labs and simulations provide students with practical learning experiences that would traditionally require physical equipment.

Digital credentials and micro-credentials: Digital badges, certificates and micro-credentials are gaining popularity as alternative credentials to traditional degrees. In addition to increasing distinct ways of student learning, enlarging and transforming educational experiences, blending teaching and learning, undermining teacher autonomy, adverse environmental impacts, infringing on autonomy and assurance, and integrating authority and influence outside of public scrutiny are just a few of the numerous ways that technology can

worsen learning inequality, as observed by policy makers, educators and stakeholders. Through PM e-Vidya, the Ministry of Education (MoE), Government of India, offers educational programmes through Direct to Home channels and other digital platforms for the benefit of students, particularly those living in remote areas. E-content for school education is offered through DIKSHA, which has recorded over 500 crore learning sessions (as on July 2023). Swayam Prabha channels in higher education are functional with nearly 22 channels. SWAYAM (Study Webs of Active Learning for Young Aspiring Mind) and Massive Open Online Course (MOOC) platforms aim at providing quality study courses across various streams, offering options for credit transfer at the higher education level.

Technology Adoption

Numerous benefits of open-source digital educational platforms, which are globally accessible, such as websites, gadgets and applications, are made available through the adoption of digital technology. These platforms can provide students, instructors, parents and other education stakeholders with rich and engaging information that enhances and supplements classroom instruction. Additionally, they can ensure that education remains uninterrupted and increase the number of educational opportunities for students facing obstacles because of intellectual impairments, controversies, hardships, cultural backgrounds, race, or other factors. Public digital platforms could empower educators and parents, in addition to students, and encourage more engaging, dynamic and cooperative approaches to teaching and learning both inside and outside the classroom. Though there are complexities in the implementation of digital education across the education system, the prospects seem viable with multimodal initiatives by the Central and State governments in transforming the educational process.

Optimising Digital Education

Digital education primarily refers to technology-enhanced learning, which occurs through the adaptation of technology and the innovative use of technology-enabled tools, digital platforms, systems and resources, and applications. This involves adaptive learning using social media tools, online resources, automated learning software and learning management systems that create learning opportunities beyond the traditional classrooms, thereby innovating and transforming the means, mode and process of learning.

The significant features of digital learning are content, capacity and connectivity (UN Transforming Education Summit Report, 2022).

Content: All students, instructors and facilitators must have access to high-quality, curriculum-relevant digitally instructional and learning resources employing digital learning platforms.

Capacity: To ensure that instructors, students and other education stakeholders have the required expertise and understanding to utilise digital tools for learning, it is essential to enhance the capacity to leverage digital technology to improve learning, based on research practices.

Connectivity: The implementation of digital accessibility implies that all educational institutions and individuals can benefit from high-speed Internet connectivity and related educational advantages.

National Education Policy 2020: Digital Education Perspectives

A plan for reforming the use of technology and its integration into online and digital education within the Indian educational system is outlined in Part III, Chapters 23 and 24 of the National Education Policy (NEP) 2020, with focus on technological integration, experiential learning and holistic

development. The NEP 2020 recognises the importance of digital education and emphasises the need to incorporate it into the academic programme.

The NEP 2020 emphasises the importance of technology and its impact on education, highlighting the changes visible in the present-day context. The rapid pace of digitalisation and its impact in education is attributed to technological advancements across all domains of education. The policy further states that the integration and utilisation of technology to enhance various educational goals shall be encouraged and accepted, provided that these interventions remain accessible.

The NEP (2020) mentions the establishment of the NETF, which may serve as a platform to discuss aspects involving application of technology in all academic areas. The Forum will act as a bridge between educational institutions, governmental organisations and other stakeholders, thereby providing the basis for recent knowledge, and innovations in the fields of education, research and development. The NETF will also create avenues for consultation and extension by sharing knowledge on important components of digital developments and best practices in technology-based education. Additionally, it will carry out the following duties: provide impartial, fact-based guidance on technology-driven interventions to state and central government bodies; develop institutional and intellectual capabilities in the field of education technology; and provide guidelines for pedagogy, technology and content for digital and online teaching and learning. States, boards, schools, higher educational institutions, and others will be able to create e-learning guidelines using these standards. The goal is to determine which technological interventions can be used to improve the teaching-learning and evaluation processes, aid in the professional development of teachers, increase educational access, and optimise planning,

leadership and administration of education, including the admissions, attendance and assessment processes (Bose, 2007). The four

principles of NETF that serve as guidelines for the adoption of digital technologies are presented in Fig. 1.

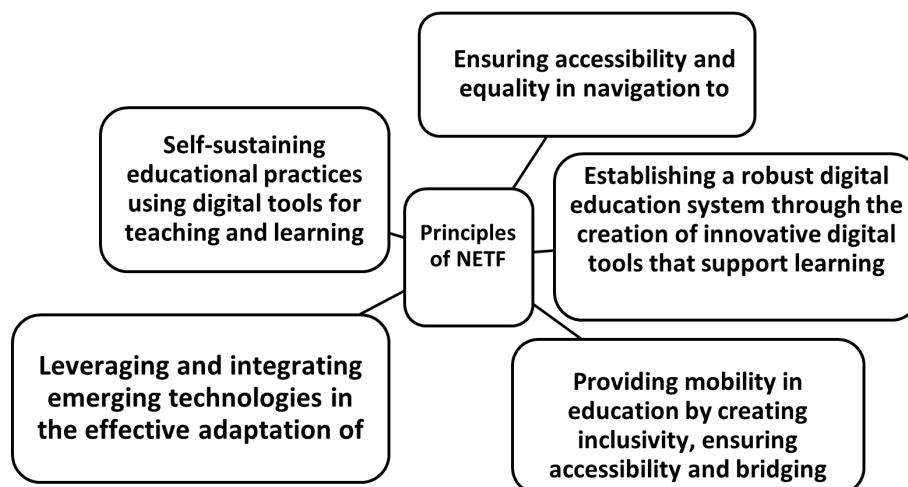


Fig. 1: Principles of the National Educational Technology Forum (NETF)

Digital Learning: Empowering Learners

A key factor in the effective integration of modern technology into educational programmes is the availability of excellent, pertinent and suitable material, platforms and solutions that organise and distribute information, and open educational resources (OERs). Education and Internet connectivity need to serve purposes beyond just putting classrooms online. They should empower students and help them develop self-control and accountability needed to advance in life, as well as the resilience and self-confidence required to overcome obstacles. Empowering learners is about providing learning solutions beyond mere connectivity. Once connectivity is established, it is about making peers, resources and technical assistance more accessible, giving learners greater opportunities, choices and access to knowledge.

Along with ensuring inclusivity, supporting regional responsibility and decision-making, facilitating the integration of digital innovations for high-quality learning in classrooms and through remote instruction,

and creating value for the nations creating and implementing these solutions, the notion of empowering learners also aims to assist governments in identifying, evaluating, and supporting these solutions (Thomas, 2012). Additionally, school associations need to empower students who use the Internet by giving them access to excellent, meaningful, inclusive and timely information presented via innovative instructional methods and secure, safe platforms. The principles of localisation, inclusivity, transparency, safety and security must be taken into account while creating high-quality, relevant and inclusive content. For students to have orientation towards digital education and various digital tools, the digital infrastructure, accessibility and availability of resources should be ensured. Besides, they should be provided with the necessary skills to integrate these tools and utilise them effectively.

Technology-Enabled School Model

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has been working towards creating a framework of guidelines for using technology in schools

to ensure continuity and high standards of instruction for all students. The goals of the UNESCO model for technology-enabled education are as follows.

- To provide comprehensive guidance designing technology-enabled, crisis-resilient educational systems that enable students to access school curricula across a number of connected learning environments, thereby preventing emergencies or crises from impairing their right to education
- To provide strategies for mobilising resources and support to strengthen the capacities of educational organisations and stakeholders in enhancing readiness for a more crisis-responsive educational system; to establish requisite technology, content and personnel infrastructure; and to incorporate aspects of technology-enabled crisis-resilient school systems
- To ensure the direct use of technology in various learning settings to advance inclusiveness, equity, gender equality and excellence of learning in the context of attaining SDG 4 by 2030; to promote the professional growth of educational professionals and other pedagogical facilitators

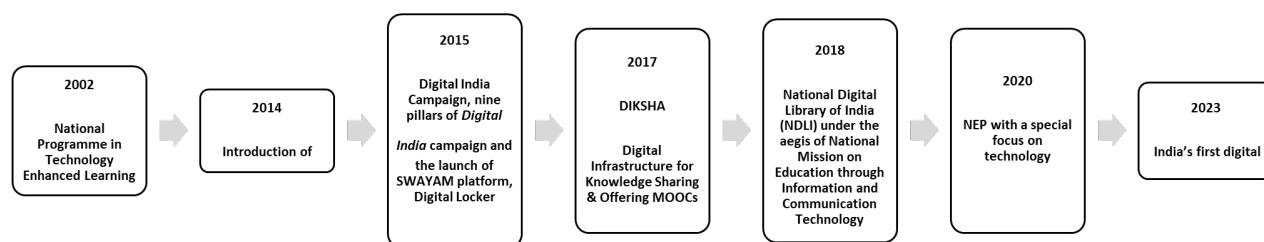


Fig. 2: Digital education development in India in the past two decades

SDG 4: Quality Education and Artificial Intelligence (AI)

Using Artificial Intelligence (AI) to achieve Quality Education (SDG 4) presents several unique challenges, despite the technology's potential in education. Beyond the general challenges, humanity needs to overcome AI's potential, minimise its drawbacks and create education systems that are future-ready. First, it remains unclear how AI will impact educators, learners and society at large. This includes questions about the effectiveness of AI interventions, the pedagogies selected for AI tools, the privacy of students, the role of instructors, and the subjects that ought to be taught in colleges and universities.

The core of contemporary approaches to AI raises a number of difficult questions about data analysis and privacy, ownership and protection. In the opinion of Jobin, et al. (2019), significant attention has been paid to these ethical challenges. Numerous studies

have also been conducted on the ethics of educational data, highlighting additional concerns about informed permission, data management and differing perspectives on data (e.g., institutional vs. individual). Any use of AI in educational settings has to appropriately handle these numerous data-related concerns, as well as other challenges unique to education, such as pedagogy selection (Gulati, 2016).

Adaptation of AI-based Digital Tools for Pedagogical Practices

In order to support regional AI innovations for education, a comprehensive plan for integrating AI into education management, instruction, learning, and assessment must be developed. This plan should include pilot testing, tracking, and assessment, as well as the collection of evidence, multidisciplinary planning, and cross-sectional governance with an emphasis on equitable, inclusive policies and ethical AI use.

- Set and track quantifiable goals to ensure equity, diversity and inclusion in instruction and AI service development.
- Examine ways how AI may enhance educational management information systems (EMIS).
- Permit EMIS to undergo a comprehensive change and to be integrated into LMSs.
- Enable educators, supervisors and students to encourage the use of AI-powered LMSs and EMIS.
- Place emphasis on the social and agency needs of students when incorporating AI-based technologies.
- Examine and modify curriculum to take into account changes in evaluation and pedagogy brought about by the growing use of AI in education.
- Evaluate and implement AI to facilitate the evaluation of many aspects of competences and results.
- Examine and evaluate the responsibilities that educators play in promoting human values, higher-order thinking skills, human contact and information transmission.
- Describe the skill sets needed for educators to look for and use AI in the planning and structuring educational activities, as well as in their own professional growth.
- Consistently search for and encourage the application of AI to assist a variety of teaching pedagogies and lifelong learning approaches.
- Create AI systems and tools to track credentials and learning outcomes across academic levels and locations. Provide training and ongoing support to teachers so they can become proficient in using AI. Include AI-related skills in school curricula, vocational and technical education and training institutes.

Challenges of Incorporating Digital Technology in Teacher Education

Teacher education is one of the key areas where innovation and change in digital

education can have the greatest impact. This means that teacher education programmes must first consider the societal trends and change-causing factors that have been recognised. Johns (2022) observes that the way digital technologies are increasingly influencing how people communicate, and how work and leisure are organised in society presents major challenges associated with the way the ongoing and future changes in the world. It is evident that certain obstacles and challenges hinder the effective use of digital technology in education. This implies that from the beginning of student-teacher training, teacher-educators must figure out how to integrate digital technology into their own teaching practices.

- Teacher-educators play a vital role in demonstrating the use of technology by incorporating digital tools into their own teaching to enhance learning outcomes; this may be referred to as Modelling Technology use (Gwendolyn & Spector, 2022).
- Anantu (2020) observes that in the present-day context, there is an increased adoption of digital tools in teaching and learning. The role of teacher-educators is to explore and to leverage these tools for diverse pedagogical purposes and adapt them appropriately.
- Teacher-educators, who integrate interactive and multimedia resources that make learning more engaging and relevant to students, capture and retain student interest.
- They should explore and model how to use adaptive learning platforms, digital content creation tools and data-driven applications to cater to diverse learners.
- They can demonstrate how to connect with experts, collaborate on projects and engage in professional learning communities using digital platforms.
- Teacher-educators can explore and model various assessment tools, digital portfolios and feedback mechanisms that support student growth and reflection (Pal, et. al., 2021)

The implementation of digital technologies in education appears to face challenges

and obstacles on the way to becoming more natural. Spector (2022) notes, “As with the chalkboard in the early 20th century, teacher-educators look to make it more likely that instructor’s practices would use digital technology.” Thus, from the very beginning of student-teacher training, teacher-educators should figure out how to include digital technology into their own teaching practices. The mediating roles of curriculum and syllabus, school community of teachers and parents, agreements and implicit regulations that influence teachers’ preferences and assessments, etc., must all be acknowledged. It is important to consider the internal inconsistencies that offer opportunities for learning and the research strategies for using them, especially for student-teachers. By examining the action through a systemic framework, one can get insights into the planning and behaviour of student-teachers.

To ensure an easy transition for prospective educators from training to practice, comprehensive and systematic methods for technology implementation, involving all stakeholders must be developed. Teachers must carefully analyse the dialectical relationship between their goals and the objects they mobilise to motivate students to take initiative and actively engage in activities. Recognising teachers as professionals and equipping them for the unpredictability and challenges of teaching students requires taking into account the tasks and frameworks within which they operate.

Elements of Digital Education skills

Ribble (2021) highlights the significant aspects of digital skills that would promote learning in a sustained way while using digital tools. Digital learning requires primary skills, with its usage classified under self, others and caring both the user and the recipient of its application.

- Digital etiquette (demonstrating proper conduct and behaviour)
- Digital access (having the knowledge and access to required digital technology)
- Digital law (keeping oneself informed about and working in accordance with digital laws and rules)
- Digital communication (understanding the parameters of exchanging digital information)
- Digital literacy (being capable of selecting and utilising a wide range of digital technologies)
- Digital commerce (purchasing products and services online)
- Digital rights and responsibilities (taking the responsibility for protecting our own rights and those of others)
- Safety (taking necessary precautions to protect personal information)
- Digital health and wellness (knowing the threats and hurdles associated with digital technology)

Exponential Applications of Social Networking Sites (SNS)

According to Zeimer (2020), “Collaboration, information processing, communication, integration of resources and content interdependence are few of the significant factors of social networking sites that contribute to digital education.” Social Networking Sites (SNSs) offer a variety of platforms for an individual to engage with students beyond the classroom, as well as for the students to interact with the instructional content. The SNSs that our students are familiar with and can access might be suitable platforms for developing interactive learning experiences related to the course material and learning objectives. Instructors must constantly acquire skills necessary to carry out the required tasks and provide their pupils with detailed instructions. Based on the extent to which SNSs contribute to student learning, educators should evaluate the benefits of utilising them and offer a well-thought-out

framework for selecting, integrating and using these platforms effectively throughout the teaching process.

Donaghy (2021) observes that, while exploring a certain SNS, learners come across a new set of tools that would help develop their learning skills. The LMS that a learner uses might easily support many of the features found on SNSs, such as interactive discussion boards, sharing finished assignments with classmates for peer review, publishing videos, and posting announcements and updates. The benefit is that students learn a new, organised and intentional approach to utilise SNSs in addition to complete their assigned tasks.

Digital Education: Place of Learning Management System (LMS)

The LMS is an important component of digital education, serving as a platform to manage and deliver online courses and training programmes. Here are some key aspects of how an LMS contributes to digital education. It acts as a centralised learning hub, providing flexibility and accessibility. Besides, platforms like these support a variety of learning resources, such as text, multimedia, interactive simulations, quizzes and assessments. LMS platforms include features for communication and collaboration, such as discussion forums and messaging systems, while also supporting integration with other digital tools and services like video conferencing tools, content repositories and learning analytics platforms. The following are some of the significant features of LMS platforms.

Provide integrating the subject matter: By incorporating digital technology into the classroom, an instructor can keep students curious and attentive. Digital technology offers a variety of interactive and multimedia resources like videos, animations, interactive simulations, quizzes and assessments. This variety caters to different learning styles and enhances engagement, making learning

more engaging and relevant to students (Mishra & Sharma, 2005). Learners may find the course even more interesting if relevant videos and presentations are included in the content repository.

Adapting to the criteria of learning styles:

Every classroom has a mix of kinesthetic, visual and auditory learners. An instructor can prioritise various modes of instruction by using the LMS strategically. While audio recordings and instructor lectures cater to the needs of auditory learners, diagrams and presentations support visual learners. Students with sensory and perceptual problems can benefit from well-planned hands-on exercises to enhance their learning.

Personalised learning: An LMS allows students to progress through their educational journey at their own pace. With an LMS, a teacher can design many activities for the same learning objective and easily develop graded assignments using the question bank accessible within the system, making an individual's learning personalized and self-paced (Sharma, 2021).

Blended learning and flipped classrooms:

According to Pal, et. al. (2021), an LMS offers an effective approach to put these educational strategies into practice. Within a scheduled period, teachers can assign students to carefully observe a video or read information on an LMS. After the stipulated duration, the instructor may conduct offline or online classes to improve on the students' conceptual knowledge of the concepts discussed (Pal, et.al (2021).

Peer participation: Teachers teaching identical curriculum and grades can work together within the school to create lesson plans, which they can share via an LMS. They can discuss or distribute appropriate subject matter contents with other educators. This type of cooperation ensures that all students at a school, regardless of the instructors, succeed. Couch (2018) observed that the primary purpose of education is to make children recognise their potential and achieve significant success.

Activity tracking: Through an LMS platform,

an instructor can track of a student's activities. The system monitors every activity a student takes, including completing assignments, reading the prescribed material, and communicating inquiries or observations. A student's performance on an assessment determines how their learning outcome is automatically generated by the LMS.

Digitalized Education System: The Way forward

The NEP 2020 policies, aimed at conducting pilot studies for online education through national agencies, have come into effect and are already proving successful, especially with online degree, certificate and skill development programmes offered by institutes like the Indian Institutes of Technology (IITs), National Institutes of Technology (NITs), Central Institute of Educational Technology (CIET), etc. The NETF, a functioning authority to enhance e-education division, works to boost digital content development, its infrastructure and capacity building.

Based on the NEP 2020 vision of developing digital infrastructure, rapid development has taken place, with systematic implementation across schooling—from middle school to higher education. AI, VR, machine learning and learning modes, such as collaborative learning, blended learning, flipped classroom and the use of AI tools for learning, have been successfully incorporated and become common practices in learning, depicting a major achievement in terms of digital initiatives. Furthermore, assistive tools and LMSs have been adopted by teachers and learners, causing remarkable changes in day-to-day educational activities.

Conclusion

Three years since the implementation of NEP (2020), visible developments and academic practices related to digital initiatives are already taking place in the Indian education system at all levels. The National Digital University, under the aegis of Higher Education of India, is a major initiative aimed at modernising the higher education system in the country. Like never before, digital tools are being widely used by students across all levels of education. Digital tools and applications, along with mobile learning platforms, have opened up global accessibility for students, ensuring access to educational resources. The optimisation of ICT resources through training across the education sector by national institutes has led to the holistic adaptation of digital resources both by teachers and students. Furthermore, digital initiatives have created possibilities for the involvement of India EdTech Consortium (IEC) and the Internet and Mobile Association of India (IAMAI) in making educational opportunities possible beyond barriers (Gohain, 2023).

Digital assessment practices through online modes have revolutionised the assessment process, which is already in widespread use and can be seen in national examinations conducted through online across India. Digital initiatives have significant results, driving the digital revolution in a short-span of time. National progress is visible and evident through digital transcendence, creation and adoption of newer digital tools for education. In the present day context, progress is prompt and instant, supported by the initiatives of the central and state governments.

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Post-Pandemic Learning: Insights from Indian College Students

Prakhar Srivastava*, Samina Bano**, Shuby Abidi***

Abstract

The COVID-19 pandemic compelled educational institutions worldwide to explore online learning. Although it ensured the continuity of education, it brought many challenges, such as sudden transitions, an uncertain future, lack of motivation and reduced social support. Globally, many studies have examined the online learning experiences of students. This study investigates the experiences of Indian college students with online learning during COVID-19 using reflexive thematic analysis. This qualitative study follows a phenomenological epistemology. A total of 12 students (five males and seven females), aged 18–21 years, from a central university in New Delhi, participated in the research. Data were collected through semi-structured interviews and analysed using reflexive thematic analysis. Four overarching themes emerged from the data.

- i. Feeling disconnected from teachers and peers*
- ii. Experiencing intellectual degradation*
- iii. Lack of exposure to diversity*
- iv. A silver lining—emergence of new possibilities*

The study captured both positive and negative experiences related to online learning. By incorporating the perspectives of Indian college students, it contributes to the global discussion on online education during Covid-19. The findings can help enhance preparedness for future emergencies and contribute to designing better online education systems by improving digital infrastructure and using technology to facilitate human connections, motivation and engagement

Keywords: Qualitative research, thematic analysis, online learning, COVID-19, higher education

Introduction

COVID-19 introduced numerous economic, psychological and social challenges, including unemployment, job loss, reduced income, food insecurity, loneliness, mental distress, and diminished access to social support and healthcare services (Liu, et al., 2021; and Panneer, et al., 2022). These effects were more pronounced among vulnerable groups, such as older adults, low-income populations, migrant workers, refugees, ethnic minorities, children and students (Li,

et al., 2023). Notably, students were severely impacted during the pandemic. The United Nations Educational, Scientific and Cultural Organization (UNESCO) reported that approximately 1.5 billion students across 191 countries experienced disruptions due to school and college closures. In India, around 320 million students were affected (Sharma, 2020).

To ensure safety and continued learning, many educational institutions worldwide shifted to online platforms. Nevertheless, the transition from conventional in-person

instruction to remote learning posed numerous challenges, including difficulties in adaptation for both students and teachers, issues with Internet connectivity, unsuitable physical environments, mental health concerns, limited access to essential resources and a shortage of teaching materials (Chang and Fang, 2020; and Crawford, et al., 2020).

The digital divide in India was significant. According to a 2019 study, Internet connectivity in rural India was available to only 32% of the population aged above 12 years and 54% of the urban population. Additionally, only 11% of households owned computers like desktops, laptops and tablets [Nielsen & Internet and Mobile Association of India (IAMAI), 2019]. Students belonging to socially and economically vulnerable groups, such as Scheduled Tribes, Scheduled Castes and Other Backward Communities, females and rural dwellers, faced even greater obstacles (Goswami and Padhi, 2021). Subsequent research explored various aspects of online learning, such as its impact on students, teachers, parents and institutions; facilitators and barriers to online learning; and the adaptation of individual institutions (Mseleku, 2020; Li, et al., 2021; Dhawan, et al., 2020; Bao, 2020; Crawford, et al., 2020). Studies also examined students' preferences, perceptions and readiness for online learning (Muthuprasad, et al., 2021). Several studies adopted a phenomenological approach to capture firsthand student experiences with online learning in various countries, including China (Zhou, et al., 2021), Iran (Salahshouri, et al., 2022) and South Korea (Shim and Lee, 2020). In these studies, students reported stress and anxiety due to financial strains, changes in routine, educational delays, health concerns and future uncertainties. Common complaints included academic overload, lack of motivation, difficulty in self-regulation, disengagement and physical issues, such as eye irritation, headache and back pain. Positive experiences included supportive interactions with teachers and staff, media

richness, social presence and autonomy. Effective coping strategies involved spending time with family, friends and pets, engaging in active leisure and hobbies, viewing online learning as an opportunity and practicing faith (Zhou, et al., 2021; Salahshouri, et al., 2022; Shim and Lee, 2020; Baruth, et al., 2021; Khan, et al., 2021).

Although educational institutions have reopened and in-person classes have resumed, it remains crucial to understand college students' experiences with online education during COVID-19. Insights gained can help design improved online learning experiences in the post-pandemic era and enhance preparedness for future emergencies.

This study explores Indian college students' experiences with online learning during COVID-19 through reflexive thematic analysis, adopting a phenomenological approach to understand these experiences firsthand. Considering India's diverse and developing context, with one of the largest educational systems globally, it is vital to include an Indian perspective. The study aims to contribute both theoretically, by adding an Indian voice to the global discourse on online learning during COVID-19, and practically, by providing insights for designing post-COVID online learning strategies and preparing for future disruptions. The findings will be beneficial for institutions, educators and policymakers.

Methodology

Design

A qualitative interview design was employed to examine the experiences of students with online learning throughout the COVID-19 pandemic. Data were analysed using reflexive thematic analysis. Braun and Clarke (2006) define thematic analysis as "a method for identifying, analysing and reporting patterns (themes) within data". Reflexive thematic analysis is a technique that emphasises the qualitative paradigm and recognises

the researcher's active involvement in coding and generating themes (Braun and Clarke, 2006, 2013 and 2021). As reflexive thematic analysis is theoretically flexible, it was essential to establish a theoretical base. Therefore, this study adopted phenomenological epistemology (examining the subjective experiences of the research participants) with an inductive approach (grounded in data) to identify both semantic (explicit or surface-level themes) and latent themes (interpretative-level themes) (Braun and Clarke, 2021).

Participants and Recruitment

The researchers employed purposive sampling to select and enroll participants. Students from different departments were informed and invited to participate in the

study through their WhatsApp class groups. Only students pursuing bachelor's and master's degrees at Jamia Millia Islamia, who had attended online classes for at least two semesters, were eligible for participation. Students with irregular attendance or suffering from severe mental health issues were excluded.

Among the students who expressed interest, 15 were contacted and briefed about the study over a phone call. Of these, 12 participants (seven females and five males) volunteered to take part in the study. These participants, aged 18 to 21 years (Mean = 19), were interviewed about their overall experiences with online education during the pandemic. To ensure anonymity, their real names were changed. The participants' details are given in Table 1.

Table 1: Characteristics of Participants

S. No	Name	Gender	Region	Course
1.	Raghav	Male	Delhi	BA (Sociology)
2.	Fiza	Female	Kashmir	MA (Human Rights)
3.	Malik	Male	Delhi	BA (Economics)
4.	Nidhi	Female	Delhi	BA (Psychology)
5.	Preeti	Female	Delhi	BA (Islamic Studies)
6.	Asfiya	Female	Kashmir	BA (Psychology)
7.	Laiba	Female	Kerala	BA (Geography)
8.	Shagufta	Female	Uttar Pradesh	BA (Sociology)
9.	Atif	Male	Uttar Pradesh	MA (Sociology)
10.	Rajat	Male	Uttar Pradesh	BA (History)
11.	Amrita	Female	Delhi	BA (English)
12.	Lalit	Male	Delhi	BA (Sociology)

Data Collection

Before data collection, ethical approval was obtained from the Ethics Committee of the Faculty of Social Science, Jamia Millia Islamia. All 12 participants volunteered to take part in the study. A participant information sheet and consent form were emailed to them.

The researchers collaboratively designed the interview schedule through mutual

agreement, and data was collected from the participants using a semi-structured interview format. The Interview questions aimed to capture students' experiences with online learning during the pandemic, covering aspects like their overall experiences, daily routines, interactions with teachers and peers, learning, examinations and family support. The interview concluded with a question in the form of an imagined scenario, where students were asked to design an ideal

online learning experience for themselves.

Since the university was physically closed due to COVID-19 (between January and February 2022), interviews were conducted via telephone and recorded with the participants' permission. The interviews lasted 32 to 73 minutes (Mean = 52.41 minutes) and were transcribed verbatim in Google Docs.

Data Analysis

The data were analysed using reflexive thematic analysis, which emphasises the importance of reflexivity and the active role of the researcher in process of coding and theme generation. This study employed Braun and Clarke's (2006) thematic analysis approach, which involves six stages—data familiarisation, initial coding, theme identification, theme review, theme definition and naming, and report creation.

To facilitate collaboration among researchers, a shared folder titled 'Online Education Research' was created on Google Drive and all transcripts were uploaded. The researchers familiarised themselves with the data by reading and rereading the transcripts.

The next step was coding the data. A meeting was held among researchers to discuss their initial observations and decide on a plan of action. Coding was conducted online using the comment feature in Google Docs, with all researchers actively engaged in the process.

After coding half of the data, a review meeting was organised to discuss the codes obtained. This meeting was attended by research scholars for the purpose of analyst triangulation. Insights generated during the discussion were used to refine the coding process further.

Once coding was completed, all codes from different transcripts were collected, compiled and printed. These codes were then organised and refined through a collaborative process. Finally, the researchers identified four themes that were reflective of the dataset.

Reflexivity

The researchers' critical reflection during the research process is known as 'reflexivity'. Reflexivity was maintained by keeping a research journal, maintaining an audit trail of the research process and writing analytical notes after each interview.

Results

We came up with four overarching themes to describe the patterned responses in the data.

- i. Feeling disconnected from teachers and peers
- ii. Experiencing intellectual degradation
- iii. Lack of exposure to diversity
- iv. A silver lining — emergence of new possibilities

Theme 1: Feeling Disconnected from Teachers and Peers

The students felt a sense of disconnection with teachers and peers during online classes. Their interactions with peers were formal and limited to essential communication. Additionally, they missed the encouragement, guidance and mentorship that teachers provided in offline settings.

Sub-theme 1: Missed personal bonds with peers

"I feel I have been disconnected a lot from my peers," said Malik. Like him, other participants also missed having a personal bond with their classmates. Instead, most students felt their interactions were formal and limited to necessary communication.

"Until you can see the facial expressions of others, you won't fully understand what is happening in the class," said Raghav. In the online mode, students often kept their cameras off for various reasons, such as limited data, the presence of family members, privacy concerns and self-esteem issues. This lack of visual interaction made

it difficult for students to see, interact and befriend one another. Raghav shared that he struggled to follow what was happening in the class because he could not see the facial expressions of his classmates.

In offline classes, students had ample opportunities to spend time together outside the classroom, engage in casual conversations and share personal experiences, which helped strengthen their bonds. In contrast, online classes lacked such opportunities. According to Raghav, interactions among students were minimal and mostly confined to online classes. He added, “In an offline setting, when a class ends and you are leaving the classroom, you discuss and share personal things as well. We can’t do that on Google Meet. No one interacts beyond the classroom.”

Some students missed shared activities, such as attending classes together, participating in group studies and engaging in class activities. “I tried making some friends, but I think we would have been better friends if we had shared experiences. This is what we lacked—shared experiences,” said Malik.

Nidhi emphasised that interaction, debates and discussions with classmates are essential to learning. She viewed her classmates not just as friends but also as co-learners, which she found missing in the online mode. “During offline classes, we used to do group studies. Sometimes, four to five of us would sit in the library and study. We used to discuss the examples given by our teachers and come up with our own. None of these things happened in online classes,” she said.

Sub-theme 2: Missed guidance and mentorship of teachers

“Although teachers were available 24×7, something was missing. We missed that special bond with the teacher,” said Laiba. Most students were appreciative and empathetic towards the role of teachers in the online mode. They acknowledged that

despite challenges, teachers gave their best, and some even went out of their way to help students. However, despite these efforts, students still felt that something was lacking. Laiba specifically missed the special bond she shared with teachers in the offline setting.

“We lacked the physical presence of the teacher. The mere presence of teachers used to motivate and assure us,” said Rajat.

“In an offline setting, when we met teachers outside the classroom, they would guide us and we could also share our problems with them. This didn’t happen in online classes,” said Preeti. In the offline mode, teachers not only taught but also encouraged students and helped clarify their doubts. Preeti recalled how her teachers would guide her beyond the classroom, while Rajat found the physical presence of teachers assuring and confidence-boosting.

Since teachers could not see students during online classes, they struggled to communicate, understand and connect with them effectively. It was difficult for them to observe and appreciate students’ individuality or identify those who needed extra attention.

Raghav pointed out that some of his classmates required special attention from teachers, which was nearly impossible in the online mode. “Some students require to be pushed, while others need more assistance. Not every student is the same. Teachers usually identify which student requires what kind of help, and provides support accordingly. This isn’t possible in an online setting,” he said.

Theme 2: Experiencing Intellectual Degradation

Many students struggled to focus and study in the online setting, experiencing a sense of intellectual degradation. They complained about losing their habit of studying, developing knowledge gaps and losing command over the subject matter.

Sub-theme 1: Lack of resources to participate in online classes

Many students were unable to join and actively participate in online classes due to significant digital disparities in both resources and skills. Even those who managed to attend faced varying levels of difficulty. In contrast, the offline mode had no such barriers, ensuring equal opportunities for all students to attend classes.

Most students accessed online classes through their mobile phones, which were convenient but offered limited participation opportunities. The small screen made it difficult to read books or view presentations shared by teachers. Additionally, only a small percentage of students could afford laptops. Lalit shared that he could use the laptop only when his older brother was not using it. "I have to use my phone. There is only one laptop, which my older brother mainly uses. I can use it only when he is not using it," he said.

Many students could not afford sufficient data packages or WiFi services, which affected their studies. Moreover, in households where multiple phones were using the Internet, slow speed created additional challenges. Shagufta cited insufficient data as a reason for missing some online classes. "I don't have WiFi at home. I use a 1.5 GB mobile daily data pack. If all data is consumed during classes, how will I study later or do anything else? Many students do not have sufficient data," she said.

Students also faced frequent power cuts and network problems. Furthermore, students from certain regions encountered more significant difficulties. For example, Asfiya from Kashmir experienced sudden Internet shutdowns. "There are times when there is complete Internet shutdown. It's not just the Internet—phone call services also stop working. It feels like we are completely cut off from the outside world," she said.

Sub-theme 2: Lack of conducive study environment

In the online mode, students attended classes from their homes. However, for some, the family environment was not conducive to studying. For example, Amrita's mother had schizophrenia, which made it difficult for her to participate in online classes. "My mother has schizophrenia. She is usually yelling, ranting or blabbering. Most of the time, it's hard to unmute and speak because she is talking in the background," she said.

Most parents did not take online education seriously and assumed students had an easier way out. However, Lalit expressed his frustration with the online setup and wished for the university to reopen as soon as possible. "When they see me attending classes from my bedroom, they say, 'You guys have an easy way out', but they don't know I hate this setup," he said.

Students also faced constant interruptions from family members talking, construction noise and vendors outside the homes. Preeti described her family as "background noise". Asfiya struggled to participate freely in online classes because her family often sat beside her during classes. "In Kashmir, it is freezing. There is a room called hamam with internal heating, and we mostly sit there. So, it's hard to turn on the camera and participate in class," she said.

Some students, especially females, had to help with household work while attending online classes. They juggled responsibilities, such as cleaning and cooking alongside their studies. Nidhi, for instance, had to attend classes from the kitchen while cooking. "Once, I unmuted myself to mark my attendance, and the pressure cooker whistled (laughs). I apologised to my teacher and said that I was in the kitchen," she shared.

Students missed the offline classroom setup, which helped them stay focused. Likewise, Amrita longed for the library, which provided

a quiet environment for studying. “The library was my favourite place to be during offline classes. I miss that quietness sometimes,” she reminisced.

Sub-theme 3: Lack of an outside push

In the offline mode, students had to wake up early and reach college on time, which instilled a sense of routine and discipline in them. However, the absence of this structure in the online setting made students lethargic. Many woke up late and frequently missed morning classes.

Malik shared that his routine has become disorganised and he lacked the motivation to wake up early. “My routine has gone haywire for a long time because, with online classes, we just have to sit in front of the screen and listen. There is no such push to wake up and go to college,” he said.

In the offline mode, supervised examinations required students to rely on their memory and understanding. For Malik, this created a positive pressure to study and motivated him to cover the entire syllabus. In contrast, online exams were unsupervised and open-book, which many students did not take seriously. “There wasn’t much exam pressure. I mean, the positive pressure that pushes you to study was lacking,” he said.

Additionally, some students were driven by a competitive spirit in offline classes. However, in the online mode, where cheating was easier, students lost the motivation to study harder and excel. Atif found it discouraging and unfair. “Earlier, there was invisible competition. We wanted to perform better than others, and that pushed us to study more. Now, anyone can copy and get good marks (pause). There is no such thing as merit anymore,” he said.

Theme 3: Missed Exposure to Diversity

The university campus is a diverse environment, bringing together people from various departments, genders, social classes, castes, regions, countries and religions. In

this setting, students have the opportunity to meet and befriend individuals from different backgrounds, fostering understanding and cooperation. Many students choose colleges in distant locations specifically to gain cultural experiences beyond their own. However, this valuable experience was lost in the online learning environment.

Laiba, who recently shifted from Kerala to Delhi, shared that she wanted to learn Hindi and was eager to meet and befriend people from North India. “Many students from Kerala enroll in Jamia Millia Islamia or Delhi University because they seek more exposure, want to study new languages and meet new people. That is the core reason why we are here,” she said.

Asfiya, from Kashmir, echoed a similar sentiment. “That is the point of coming to Delhi...especially because many students from far-off places come here to study. I have met people from different cultures at the university,” she said. She emphasised that many students from her hometown aspired to study in Delhi as it exposed them to diverse cultures and people.

In the online mode, none of this was possible. Due to familiarity and the limitation of only interacting with people living nearby, friendships was largely confined to geographical areas. Amrita observed that students from different regions formed separate groups in her class. “Most people from Kashmir have their own group, while those from Uttar Pradesh and Bihar have theirs. People from the South also have their own group. That happened because, in the end, you could only find people who were already familiar with you,” she remarked.

Theme 4: A Silver Lining—Emergence of New Possibilities

Although students faced many challenges in online education, it acted as a safe alternative for providing education during the pandemic. They shared some benefits of online education, which are categorised as follows.

Sub-theme 1: Diminishes the barrier of time and space

One of the most important benefits of the online mode is that it diminishes the barriers of time and space. Rajat felt that online learning allowed anyone to study anything from anywhere. “While sitting in your living room, you can have the luxury of being taught from London,” he quipped.

In the offline mode, timetables often included gaps between classes. While some students considered this waiting period as a waste of time, the online mode allowed them to use this time constructively. For example, Fiza shared that during offline classes, she had to wait 2–3 hours for her last class, which left her feeling drained. “Late classes make you tired. I had a class at 3 pm, and there used to be a long break before it. Every day, I had to wait for 2–3 hours. It was a waste of time for those who didn’t live in the hostel. Since I lived in a paying guest accommodation, I couldn’t go back in between,” she explained.

Sub-theme 2: Learning extended beyond the classroom

In the online mode, teachers and students could utilise digital resources, such as audio, video or online books to enhance learning. Malik shared that their learning extended beyond the classroom. Students also noted that learning management systems like Google Classroom made resource sharing and assignment submission more convenient. They even suggested integrating these tools into offline learning. “We broke free from the restraints that confined us in offline learning. Now, we can incorporate digital resources into our teaching–learning process,” he said.

The online mode also gave students greater control over their learning. Some enrolled in online courses and attended webinars. For example, Preeti, who always wanted to learn English, enrolled in a live online course offered by an international organisation based in Turkey. She is now teaching the same course to students worldwide. “I first

learned English from them, and now I’m teaching it to others. My students are from Iran, Turkey, America, London and India. It’s great that I can interact with people from around the world,” she said.

Students also pointed out the growing trend of teachers uploading their lectures online. Atif listed some of his favourite YouTube channels and shared his enthusiasm for watching lecture series. “Many teachers and professors worldwide are uploading their lectures on YouTube. I can watch them for hours (laughs). You can learn anything now,” he grinned.

Discussion

This study examined the online learning experiences of Indian college students during the COVID-19 pandemic using reflexive thematic analysis. The analysis revealed four overarching themes that describe the patterned responses in the data: (i) Feeling disconnected from teachers and peers; (ii) Experiencing intellectual degradation; (iii) Lack of exposure to diversity; and (iv) A silver lining—emergence of new possibilities.

These themes hold particular significance in light of the National Education Policy 2020 (NEP 2020), which envisions the integration of technology and blended learning in higher education. NEP 2020 emphasises that extensive use of technology should retain the benefits of face-to-face interaction—a balance that the findings suggest is crucial (Ghosh, 2023). Furthermore, the University Grants Commission’s (UGC) subsequent guidelines permitting up to 40% online teaching mode in regular degree programmes reflect a shift towards blended learning approaches (Gohain, 2021). This policy framework supports what Mukhopadhyay (2023) describes as “a blending of carefully chosen learning tactics from face-to-face and technology-mediated learning domains to achieve expected learning outcomes”. While students’ experiences during emergency remote teaching differ from planned blended learning, the findings offer valuable insights

for implementing these policy directives effectively.

The first theme, 'Feeling disconnected from teachers and peers', highlights students' sense of disconnection and their strong desire to connect with teachers and peers. It underscores the basic human need for belonging and the formation of strong social bonds, aligning with the self-determination theory's emphasis on relatedness as a fundamental psychological need in learning environments (Willems and Lewalter, 2012). In physical classrooms, students fulfill this need by building friendships and seeking guidance from teachers. This is especially important for adolescents as this stage is characterised by an increased need for social connection and acceptance from peers (Andrews, et al., 2020). Positive relationships with teachers also enhance students' emotional and social skills, aiding in their overall development (Pianta, et al., 2012). However, online learning significantly impacted these relationships, thwarting students' need to belong and negatively affecting their socio-emotional development (Gadassi Polack, et al., 2021).

The SERU-India COVID-19 survey reported that the lack of peer interaction was the most significant obstacle faced by 6,425 students from 38 Indian universities during the pandemic (O. P. Jindal Global University, et al., 2022). Students also sought support and empathy from teachers, as evidenced by thematic analysis of a social media platform videos (Literat, 2021) and global studies on online learning experiences (Tackie, 2022). The absence of intimacy-facilitating behaviours, such as eye contact, facial expressions, non-verbal communication, physical closeness, informal interaction and humor (Tackie, 2022), further contributed to the disconnection felt by students.

The second theme, 'Experiencing intellectual degradation', reflected students' difficulty in focusing on studies and feeling intellectually degraded due to the digital divide, lack of a conducive study environment, and the absence of external motivators like

daily routines, supervised exams and competitive spirit. From a self-regulated learning perspective (Zimmerman, 2002), students' reports of degraded learning can be attributed to the sudden shift from externally regulated learning—structured by institutional routines, supervised examinations and a competitive academic environment—to a setting that required high levels of self-regulation, a skill many had not yet developed. This abrupt transition from structured to self-directed learning, without adequate scaffolding or preparation, made it difficult for students to effectively manage their learning process.

The digital divide was evident from disparities in Internet access, with penetration rates of 87% in developed countries, 47% in developing countries and 19% in least developed countries (International Telecommunication Union, 2019). In India, a notable gender gap in Internet usage was observed, with over 57% of men having access, compared to just one-third (33.3%) of women (International Institute for Population Sciences and ICF, 2022). The lack of digital infrastructure and persistent societal inequalities disproportionately affected students from lower socioeconomic backgrounds, marginalised communities, rural areas and females (Goswami and Padhi, 2021).

In physical classrooms, students follow a structured daily routine of attending classes, taking supervised exams and engaging in a healthy competitive environment. However, in the online setting, slow Internet connectivity, ineffective instructional practices, and the overlap between home and learning environment made it difficult for students to stay motivated and engaged (Ndambakuwa and Brand, 2020; and Teodorescu, et al., 2021). A comprehensive review analysing data from 42 studies across 15 countries revealed that educational advancement significantly decelerated during the COVID-19 pandemic. This slowdown in learning was particularly severe for students from economically disadvantaged backgrounds

(Li, et al., 2023). In India, university students reported a learning loss of 40–60% during the COVID-19 pandemic (TeamLease Edtech, 2021).

The third theme, 'Lack of exposure to diversity', emphasises students' desire to explore people and cultures other than their own. India is a land of diverse cultures, religions, languages, traditions and customs, but is well-known for its unity. This theme connects directly to the contact theory (Allport, 1954) and contemporary research on intercultural learning in higher education. Research in the area of inter-group relations identified an inter-group strategy called 'co-existence', which is unique to the culture of India. In coexistence, people from different cultures not only exist side by side, but are open and receptive to other cultures (Mishra, Bano & Tripathi, 2017). This desire for cultural exchange was expressed by the participating students. For them, university campuses provide a safe space to interact and befriend people from different cultures. Interacting with individuals from varied backgrounds offers multiple benefits. It helps promote friendships across different groups and reduces biases and unfair treatment (Killen, et al., 2021). Such exposure also contributes to greater social cohesion and equality in diverse societies (Allen, 1992). Moreover, it enhances students' career prospects by developing their skills in collaborating with people from different walks of life (Alger, 1997). However, during COVID-19 students could not experience diversity in online classes, which limited their interaction with people from their own background and culture.

Online learning was entirely bleak; it also opened up new possibilities, encapsulated in the fourth theme 'A silver Lining—emergence of new possibilities'. It enabled the continuation of the learning process beyond lockdown, and fostered the acceptance and innovation of online learning. By eliminating the barriers of time and space, it extended learning beyond the traditional classroom setting. The benefits of online

learning include flexibility regarding time and location, access to a broader audience, a wider range of courses and content for self-directed learning, affordability, and minimal use of travel resources (Mukhtar, et al., 2020; Dhawan, 2020).

The fourth theme aligns with the transformative learning theory (Mezirow, 1991), suggesting how disruption can lead to new perspectives and adaptations in learning approaches. While students faced numerous challenges during online education, they also recognised emerging opportunities that could enhance future educational practices. This finding connects with NEP 2020's vision for technology integration in education and the UGC's framework for blended learning implementation.

Policy Implications

The findings have significant implications for designing effective blended learning experiences and improving preparedness for future emergencies in Indian higher education. The four themes identified in the research provide a framework for developing comprehensive policy recommendations that can balance educational quality with technological innovation.

Drawing from the first theme of disconnection from teachers and peers, a key policy consideration emerges around preserving and enhancing social connections in blended learning environments. Social connections play a significant role in adolescent development and increase students' emotional, cognitive and behavioural engagement (Furrer and Skinner, 2003). Therefore, while adopting blended models, policies should mandate substantial physical classes to foster meaningful bonds between students and teachers. When face-to-face interaction is not possible, policies can emphasise strengthening social presence—the perception that real human beings are involved in the interaction (Tu and McIssac, 2002). This can be achieved through structured online communities, regular

synchronous sessions, formal mentoring systems and mixed-mode collaborative activities. Such measures ensure that the social fabric of education remains strong even in technology-mediated environments.

The second theme of intellectual degradation highlights the need for policies that actively prevent learning loss and sustain student engagement. The findings reveal significant challenges related to motivation and academic progress, particularly among vulnerable student populations. To address these concerns, comprehensive policies should establish regular monitoring systems for identifying learning gaps and mandate engaging teaching approaches that incorporate interactive media and gamified learning. The integration of emerging technologies like Artificial Intelligence (AI), Augmented Reality (AR) and Virtual Reality (VR) can enhance learning experiences, while clear infrastructure standards can help bridge the digital divide. Policies must ensure equitable access to digital resources and learning management systems, aligning with NEP 2020's vision while providing practical solutions to the challenges identified in the study.

Building on the third theme—lack of exposure to diversity—blended learning offers unique opportunities to expand educational access and promote cultural exchange. This aligns with Goal 4 of the United Nations' Sustainable Development Goals, which advocates for inclusive and equitable education (United Nations, 2022). Policies can leverage technology to facilitate virtual cultural exchange programmes and foster cross-institutional collaboration. Additionally, integrating multicultural curriculum elements can support the development of 'virtual global citizens' while preserving and promoting India's cultural heritage through digital platforms. These initiatives ensure that technological integration enhances rather than diminishes cultural learning opportunities.

The fourth theme—the emergence of new possibilities—supports the need for policies

that balance innovation with stability. Using the UGC's IPSIT framework (Identify resources and activities, Provide resources and announce activities, Support and provide scaffolding, Identify learning gaps and provide feedback, Test) as a foundation, policies should focus on comprehensive teacher training in blended pedagogy and establishing quality assurance mechanisms for online components (Sancheti, 2023). The systematic integration of traditional and digital teaching methods, coupled with structured student support systems and emergency preparedness protocols, can ensure the sustainable implementation of blended learning models.

Together, these recommendations help create what Garrison and Vaughan (2007) describe as a "thoughtful fusion" of learning experiences. This study provides valuable insights from Indian students' perspectives, enriching the global discourse on educational transformation. By carefully considering social, academic, cultural and technological factors, these recommendations provide a roadmap for developing resilient and effective blended learning environments in Indian higher education.

Limitations and Future Directions

While the study provides valuable insights into students' experiences with online learning, several limitations warrant consideration. Firstly, the context was unique—the transition to online learning was abrupt and necessitated by COVID-19 rather than being part of a planned educational strategy. This emergency response differs significantly from thoughtfully designed blended learning environments. Secondly, the sample primarily consisted of students from social science departments at a single central university, which may not fully represent the experiences of students across different disciplines, institutions or geographical regions within India.

These limitations highlight several important directions for future research. As institutions

transition to planned blended learning approaches, future studies should examine how students' experiences evolve in these more structured environments, particularly investigating the effectiveness of different blended learning models (hybrid classes, flipped classroom, rotation model, etc.) across disciplines. Comparative studies between STEM fields, humanities and professional courses could contribute to the development of discipline-specific guidelines for integrating online and offline components. Additionally, future research should expand beyond student perspectives to include teachers' experiences with blended methods, their professional development needs and the institutional challenges of implementing blended learning policies. Longitudinal studies tracking the evolution of blended learning practices, as well as research assessing the effectiveness of policy interventions, particularly those focussed on social connection, learning loss prevention and technology integration, would provide valuable evidence for refining policies in Indian higher education.

Conclusion

The study employed reflexive thematic analysis to explore the online learning experiences of Indian college students during the COVID-19 pandemic, revealing four significant themes—feeling disconnected from teachers and peers, experiencing intellectual degradation, lack of exposure to diversity and discovery of new possibilities. These findings provide crucial insights for the future of education in India, particularly as institutions move towards blended learning models.

The themes illuminate fundamental aspects of effective learning environments. The prominence of social disconnection and reduced cultural exposure emphasises that education is inherently a social process, requiring thoughtful integration of technology that enhances rather than

diminishes human connections. The intellectual degradation theme highlights critical infrastructure and motivational challenges that must be addressed through systematic policy interventions. However, the emergence of new possibilities suggests that thoughtfully designed blended learning approaches could potentially democratise education while maintaining quality.

This study makes significant contributions both theoretically and practically. Theoretically, it adds Indian students' voices to the global discourse on educational transformation, providing insights from one of the world's largest and most diverse educational systems. Practically, the findings inform the development of blended learning policies aligned with NEP 2020's vision, offering concrete recommendations for creating resilient educational systems that balance technological innovation with human connection. As higher education continues to evolve, these insights can guide the development of more effective, inclusive and adaptable learning environments that preserve the best aspects of traditional education while leveraging the opportunities presented by digital transformation.

Declarations

The researchers declare no conflicts of interest pertaining to this study's content. The Institutional Ethical Committee for Social Sciences at Jamia Millia Islamia, New Delhi, granted ethical approval for this research. All participants provided their consent prior to involvement. Upon request, the corresponding authors can provide access to the data collected and analysed during this investigation.

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Experiential Learning in Science in Odisha Government Schools: Perceptions and Practices

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Abstract

Experiential learning is an educational approach that facilitates the understanding and application of scientific concepts by integrating theoretical knowledge with practical, hands-on experiences. This study explores the resources, perceptions, practices and challenges involved in planning and implementing experiential learning in secondary science education in government schools in the Mayurbhanj district of Odisha. Using a mixed-method approach, data were collected through surveys from both quantitative and qualitative perspectives. The findings indicate a positive inclination towards experiential learning among all respondents. The facilitators perceived that experiential learning improves engagement, understanding, retention and the practical application of science beyond academics. Learners found it motivating and effective in making abstract concepts concrete through hands-on experiences. While there is a strong emphasis on incorporating effective practices, such as hands-on activities and real-world applications, notable gaps exist in collaboration, reflective opportunities and addressing diverse needs of learners. However, over-experiential learning, limited interdisciplinary approaches, insufficient resources, time constraints and large class sizes hinder effective implementation. The study concludes that increased infrastructure funding, specialised training and careful planning are essential to fully realise the potential of experiential learning, thereby enhancing science education and better preparing students for the future.

Keywords: *Experiential learning, perception, hands-on experiences, science education*

Introduction

Experiential learning, rooted in the philosophies of John Dewey and David Kolb, is a dynamic educational approach wherein individuals learn through direct experience and subsequent reflection (Beard and Wilson, 2013). Unlike traditional passive learning, experiential learning actively engages learners in real-life contexts, fostering critical thinking, problem-solving and decision-making skills. Dewey (1938) emphasised that true learning occurs through active engagement and reflection, which shape future actions. Kolb (1984) expanded on this by introducing a four-stage model of experiential learning: (a) concrete

experience, (b) reflective observation, (c) abstract conceptualisation and (d) active experimentation. This cyclical process enables learners to experience, reflect, conceptualise and apply their knowledge in various contexts.

Experiential learning can take many forms, including field trips, simulations, project-based learning, internships and cooperative activities (Gilbert, et al. 1982). These methods enable students to apply theoretical knowledge in real-life contexts, enhancing understanding and developing essential skills. Cannon and Simpson (1985) note that hands-on science education allows students to experiment, observe, analyse data and

draw conclusions, deepening their grasp of scientific concepts. Experiential learning fosters active engagement and intrinsic motivation by making learning relevant and meaningful (Sharma, 2006). Burch, et al. (2016) highlight that active learning, a key component of experiential learning, integrates experience and reflection, encouraging students to engage with the world beyond the classroom.

In science education, experiential learning is highly effective, enabling students to explore phenomena through direct interaction and experimentation, fostering curiosity and understanding (Jaber, 2002). Activities like experiments, museum visits and science fairs make science classes tangible and exciting. Experiential learning integrates hands-on activities, critical thinking and real-world applications, preparing students for both academic success and real-world challenges. This approach aligns with the needs of modern education, particularly science, where active engagement with the material is essential for understanding complex concepts.

Review of Related Literature

Researchers consistently highlight the benefits of experiential learning in enhancing educational outcomes across various subjects and levels. Bates (2014) outlines several experiential learning models—problem-based, case-based, project-based and inquiry-based learning—that positively impact various aspects of science education. Research studies suggest that these approaches enhance problem-solving skills (Funa and Prudente, 2021), improve teaching quality (Zhang and Campbell, 2012), increase enthusiasm for science (Rukhsana et al., 2022) and boost higher-order thinking skills as found by Ives and Obenchain (2006) in their study on high school students involved in experiential learning. Shrivastava (2002) noted that students with a scientific attitude and those using convergent learning styles performed better in science. Similarly,

Williams (1990) and Fox (2012) confirmed that the Kolb model of experiential learning significantly affected knowledge acquisition, skill mastery and attitudes towards learning. Garcia-Sánchez et al. (2023) found that innovative experiential learning methods, like mobile lab kits, improved scientific temperament, academic performance and inclusivity among underprivileged students. Assem et al. (2023) critiqued traditional science education for focusing on factual knowledge over process, advocating for an inquiry-based approach to stimulate active investigation. Research also supports the positive impact of experiential learning on prosocial behaviour (Burch, et al. 2016), empathy and well-being in adolescents (Reshmad'sa and Vijayakumari, 2017). Overall, these studies affirm that experiential learning is a robust pedagogical approach that enhances academic performance, critical thinking (James & Williams, 2017) and essential life skills (Voukelatou, 2019), making it a valuable tool in modern science education.

Rationale of the Study

It is necessary to improve the level of science education in secondary schools. The National Education Policy 2020 (NEP 2020) emphasises comprehensive, interdisciplinary education and the need for practical, activity-based learning. Experiential learning has been shown to improve student interest, engagement and understanding of scientific concepts. Both NEP 2020 and the National Policy on Education 1986 (NPE 1986) highlight the importance of ‘experiential, exploratory and activity-based learning’ at the primary and secondary levels. Initiatives, such as Sarva Shiksha Abhiyan (SSA) and Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and Samagra Shiksha, also stress the need for such approaches to improve the quality of education. Effective implementation of these policies requires an understanding of the barriers and enablers to experiential science learning at the secondary level.

This study will explore high school teachers' and students' perceptions and ongoing practices related to experiential learning in science, providing valuable insights to support the implementation of NEP 2020 and other government initiatives.

Objectives

1. To examine the availability of infrastructure, resources and curricular activities conducted in implementing experiential learning in science at the secondary stage
2. To study the perceptions of teachers and students at the secondary stage in experiential learning in science
3. To investigate the practices and challenges at the secondary stage in planning and implementing experiential learning in science at the secondary stage

Methodology

Procedure

This research aimed to study the perceptions of experiential learning in science at the secondary stage in government schools of Mayurbhanj district of Odisha. To achieve the objectives of study, a mixed-method approach was adopted.

Sample

A purposive sampling technique was employed to select the sample, which consisted of 30 science teachers and 100 students from 15 government schools in three selected blocks (Jashipur, Raruan and Baripada) of Odisha's Mayurbhanj district.

Tools Employed

A review of related literature revealed that no standardised tool was available to study the perceptions and practices of secondary teachers and students regarding experiential learning in science. To develop the necessary tools, insights from related literature and expert opinions (four professors and one assistant professor) were considered.

The tools included an information-cum-inventory schedule to assess infrastructure, resources and curricular activities for implementing experiential learning; two questionnaires for teachers and students to collect data on their perceptions, practices and challenges in planning and implementing experiential learning in secondary science education; and an observation schedule for classroom observations of related practices. The questionnaires were designed with 3-point Likert Scale and open-ended questions.

Data Collection and Analysis

The study adopted both quantitative and qualitative approaches for data collection. The tools included open-ended questions and observations, along with close-ended statements. A descriptive analysis was used for analysing quantitative data. Necessary statistical tools, such as percentages and graphs, were applied to examine quantitative data, while logical and thematic analysis was used to assess qualitative data. The extensive participant-generated data was systematically organised by categorising under numerous headings. The information collected through the aforementioned tools was classified either independently or by grouping responses based on their intended purposes, as necessary.

Major Findings of the Study

The first objective is to study the status of the availability of infrastructure, resources and curricular activities involved in implementing experiential learning in science at the secondary level. This analysis is based on data obtained from inventory-cum-checklist. The analysis of 'infrastructure' component consists of several aspects, such as adequate classrooms, playgrounds, science parks, libraries, computers, projectors, smart boards, printing devices, audio-visual tools, digital classrooms, resource rooms, science labs, art rooms and music rooms. Similarly, the analysis of 'resources for curricular

activities' includes several elements, including science clubs, models for practical learning, display boards, access to digital platforms, science kits, basic lab supplies

and reference materials. The analysis has been conducted on the basis of four levels—'Unavailable', 'Available', 'Functional' 'Accessible' to students (Figure 1).

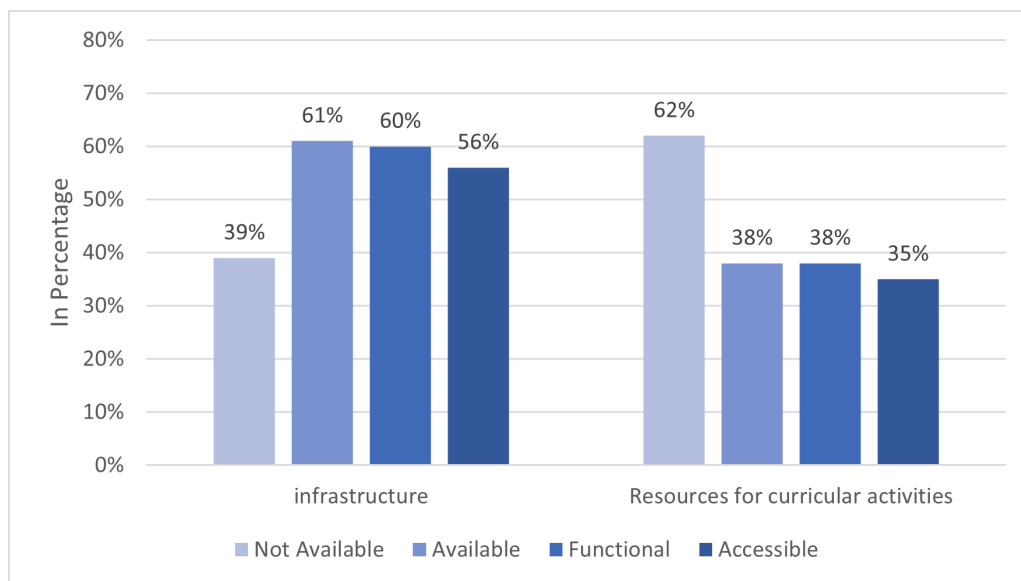


Figure 1: The status of the availability of infrastructure and resources in implementing experiential learning in science at the secondary stage

Figure 1 indicates that the availability and functionality of the necessary infrastructure are at a reasonable level, around 60%. However, only 56% of the infrastructure is accessible to students. In contrast, resources for curricular activities are limited, with less

than 40% available and only 35% accessible to students. This highlights a significant gap in the provision of basic resources for curricular activities, which are crucial for the holistic development of students, specifically in science.

Table 1: The status of schools conducting curricular activities for implementing experiential learning in science

S. No.	Activities	Conducted	Not conducted
1.	Academic excursions	100%	0%
2.	Science exhibitions	0%	100%
3.	Co-curricular programmes	0%	100%

The analysis of curricular activities under the first objective considered academic excursions, science exhibitions and co-curricular activities (see Table 1). None of the surveyed government schools had conducted academic excursions in recent years. However, all schools (100%) had organised co-curricular programs and science exhibitions, providing opportunities for the

practical application of classroom learning and stimulate scientific interest. While basic educational facilities in government schools are relatively well-provided, resources for curricular activities and experiential learning are severely lacking. With only 35% accessibility, resources for curricular activities show a 21% shortfall compared to basic infrastructure.

Teachers' Perceptions of Experiential Learning in Science

The second objective explores teachers' perceptions of experiential learning in science at the secondary stage. The analysis

is based on a 3-point Likert Scale employed in the survey, consisting of three response levels—'Disagree', 'Undecided' and 'Agree'. The results are interpreted on the basis of these three themes, which are derived from the literature review.

Table 2: Teachers' perceptions of experiential learning in science

S. No.	Statement	Disagree	Neutral	Agree
A.	Effectiveness of Experiential Learning			
1.	It is an effective teaching method in science.	0%	0%	100%
2.	It can develop among learners scientific skills, such as problem solving, critical thinking, etc.	6.7%	0%	93.3%
3.	It encourages learning through innovative methods.	0%	0%	100%
B.	Methods and Tools supporting Experiential Learning			
4.	Atal Tinkering Lab (ATL) can foster scientific skills among learners.	0%	20%	80%
5.	Hands-on learning is a supplementary method of teaching science used along with traditional methods.	26.7%	43.3%	30%
6.	Sports is not a method of teaching science at the secondary stage	40%	50%	10%
C.	Goals and Necessity of Experiential Learning			
7.	The goal of experiential learning is to score well in exams.	63.3%	13.3%	23.3%
8.	Learning from experiences is for the less educated.	80%	16.7%	3.3%
9.	Activities are not necessary in science.	96.7%	3.3%	0%

Table 2 indicates a strong positive perception of teachers regarding the effectiveness of experiential learning in science education. All respondents (100%) agreed that experiential learning is an effective and inspiring method of teaching. Additionally, the majority (93.3%) believed that it helped develop crucial scientific skills like problem-solving and critical thinking.

However, there are mixed perceptions regarding the tools and methods that support experiential learning. A significant proportion of teachers (20%) remained neutral about the effectiveness of the Atal Tinkering Lab (ATL), while only 10% agreed with its role in experiential learning. A majority (50%) of the teachers are neutral with the opinion that sports is not a method of teaching

science, suggesting uncertainty or lack of understanding about its effectiveness as a tool and method.

Furthermore, less than 40% of the teachers either agreed or disagreed with the view that hands-on learning complements traditional methods, while over 40% responded neutrally, indicating scepticism about its role in science education.

A large number of teachers (63.3%) disagreed with the notion that achieving good marks is the primary objective of experiential learning. Simultaneously, an overwhelming majority (96.7%) disagreed with the statement that activities are not necessary in science, reinforcing their understanding of the essential role of activities in science education. Additionally, 80% of the teachers

disagreed with the idea that experiential learning is only necessary for less-educated

students, asserting their belief in its universal applicability.

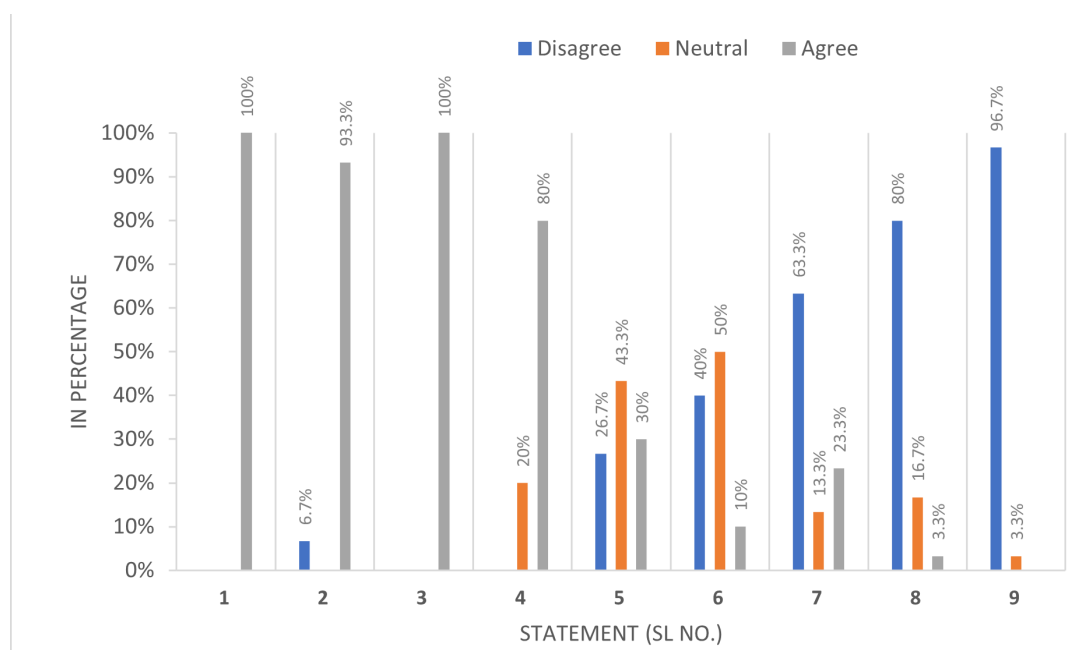


Figure 2: Teachers' perceptions in experiential learning in science at the secondary stage

Students' Perceptions in Experiential Learning in Science

The second objective examines students' perceptions of experiential learning in

science at the secondary stage. The analysis follows the quantitative analysis of data obtained from a 3-point Likert Scale employed in the survey under few distinct themes (see Table 3).

Table 3: Students' perceptions of experiential learning in science

S. No.	Statement	Disagree	Neutral	Agree
A. Impact of experiential learning				
1.	My experiences help me understand science.	0%	0%	100%
2.	Hands-on experiences help in understanding the application of science in real world.	2%	5%	93%
3.	Doing activities or conducting science experiments in class improves critical thinking skills.	75%	8%	17%
4.	Project work is stressful.	2%	1%	97%
5.	My skills get improved when I learn by doing.	2%	4%	94%
6.	Experiments or activities in science class are related to daily life.	4%	8%	88%
7.	Activities or experiments helps in other fields of study.	5%	2%	93%
B. Active engagement				
8.	I enjoy learning science in group activities.	3%	0%	97%
9.	Visit to science parks or museums improve my understanding in science.	5%	7%	88%

10.	I am interested in participating in science exhibitions.	10%	1%	89%
11.	I can stay focused if digital tools or videos are used for teaching science.	3%	2%	95%
12.	I receive feedback on my activities in science class.	8%	4%	88%

All students (100%) agreed that their past experiences helped them to relate to and understand science. High agreement percentages, above 90%, regarding the effectiveness of hands-on experiences in real-world applications, along with the improvement of personal skills, highlight the significant impact of experiential learning in science education (see Table 3). An overwhelming 93% of the students believe that such involvement has relevance beyond the classroom and subject, reinforcing the interdisciplinary value of experiential

learning. On the contrary, 97% of the students agreed that project work is stressful. The qualitative analysis further explores the challenges associated with this issue. The majority of students (88% to 97%) perceive educational visits, the use of digital tools, participation in science exhibitions and group activities as enjoyable aspects of experiential learning. Also, a substantial proportion (88%) indicated that they received feedback which facilitated learning improvement. But still a notable fraction (12%) felt they were not adequately supported.

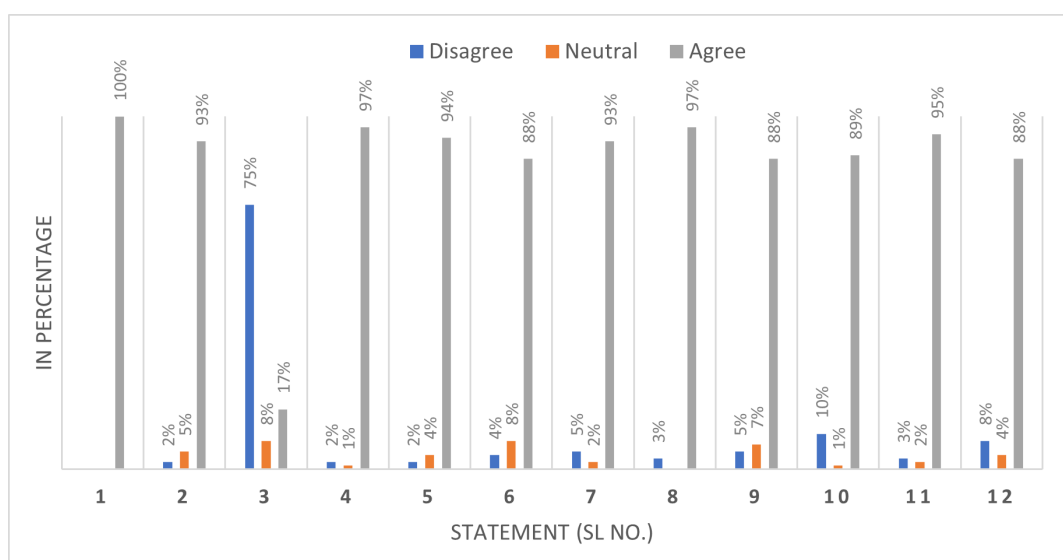


Figure 3: Students' Perceptions in experiential learning in science at the secondary stage

Practices for Implementing Experiential Learning in Science

The third objective is to investigate the on-going practices for implementing experiential learning in science at the secondary stage. The analysis is based on the quantitative analysis of data

obtained from a 4-point Likert Scale, administered to teachers and students of respective schools and subjects. Additionally, observations were recorded using a rating scale by the researchers as non-participant observers there. The study was conducted under a few distinct themes (see Table 4).

Table 4: Implementing interactive experiential learning methods in science

S. No.	Items				
A.	Classroom observation	Poor	Adequate		Well
1.	Well-ventilated and having enough light	0%	30%		60%
2.	Classroom encourages artistic creativity	0%	40%		70%
B.	Interactive and reflective practices as reported by teachers	Never	Sometimes	Mostly	Always
3.	I incorporate hands-on activities or experiments during science lessons.	3.3%	13.3%	73.4%	10%
4.	I facilitate collaborative works in the science class.	0%	6.6%	46.7%	46.7%
5.	I provide opportunity to reflect on their activities.	0%	13.3%	46.7%	40%
C.	Interactive and reflective practices as reported by students	Never	Some times	Mostly	Always
6.	My science classes are interactive.	1%	41%	22%	36%
7.	I conduct experiments or activities in the science class.	5%	37%	35%	23%
8.	I am taught science using hands-on materials.	5%	36%	33%	26%
9.	The activities mentioned in chapters, covered in the science books, are performed.	12%	25%	20%	43%
10.	I get the opportunity to express freely in the classroom.	4%	16%	20%	60%
11.	I get the opportunity to reflect on activities.	6%	22%	21%	51%
D.	Interactive and reflective practices observed	Yes	Partially		No
12.	Engaging introduction	Yes (60%)	Partially (40%)		No (0%)
13.	Real and relevant examples from the surroundings are provided.	Yes (70%)	Partially (30%)		No (0%)
14.	Appropriate TLMs are used for the effective understanding of learners.	Frequently (50%)		Often (30%)	Rarely (20%)
15.	ICT resources are used in transactions.	Frequently (60%)		Often (30%)	Rarely (10%)
16.	Making learning enjoyable.	Frequently (70%)		Often (30%)	Rarely (0%)
17.	Teachers simultaneously attend to learners' needs.	Frequently (60%)		Often (20%)	Rarely (20%)

Table 4 indicates a positive classroom environment with good ventilation and lighting (70%), along with the encouragement of artistic creativity (60%) through colourful diagrams and illustrations on walls and

charts made by students. Science classes are generally interactive, with 58% of the students frequently expressing themselves and 73% engaging in reflective activities. Teachers regularly incorporate hands-on

activities (73.4%). However, there is a gap in consistently facilitating collaboration and providing reflective opportunities, with only 46.7% doing so frequently. Observations confirm engaging introductions (60%), frequent use of real-world examples

(70%), use of appropriate TLMs (50%) and ICT resources (60%), contributing to an enjoyable learning experience (70%). However, 20% of the teachers rarely address all learners' needs, highlighting a need for improvement.

Table 5: Evaluation practices in experiential learning in science

Sl. No.	Items				
A.	Evaluation practices as reported by teachers	Never	Sometimes	Mostly	Always
1.	I encourage learners to design their own activities.	0%	33.6%	36.4%	30%
2.	I expose learners to real-life situations during science lessons.	3.4%	3.4%	46.6%	46.6%
B.	Evaluation practices as reported by students	Never	Some times	Mostly	Always
3.	I apply scientific concepts to real-world problems in class.	1%	26%	30%	43%
4.	I have participated in science experiments or activities outside class.	13%	44%	22%	21%
C.	Evaluation practices as observed	Frequently		Often	Rarely
5.	Discussion of projects, activities post lesson.	57%		29%	14%
6.	Teacher connects subject beyond science.	20%		70%	10%
7.	Main focus on memorising answers.	30%		70%	0%
8.	Scope for sports-integrated pedagogy.	0%		0%	100%
9.	Facilitating students' problem-solving skills.	40%		50%	10%

Table 5 highlights discrepancies in evaluation practices in experiential learning in science education. Teachers reported that they facilitate learning while allowing learners to design activities mostly (36.4%) and often expose them to real-life situations (46.6%). However, from the students' perspective, applying scientific concepts to real-world problems is prevalent (43% always), stating that they 'always' do so. However, participation in science activities outside the classroom is less consistent, with only 21% reporting that they 'always' engage in such activities. Observations revealed a strong focus on connecting subjects beyond science (70% 'often') and post-lesson discussions (57% 'frequently').

However, there is a concerning reliance on memorisation (70% 'often') and a complete lack of sports-integrated pedagogy (100% 'rarely'). These findings indicate robust real-world applications and follow-up activities but also reveal a significant reliance on rote learning and a lack of interdisciplinary approaches involving sports.

Challenges in Planning and Implementing Experiential Learning EL in Science

The third objective, which examines the challenges, perceived by teachers in implementing experiential learning science, analyses qualitatively using data collected

from open-ended questions in survey questionnaires. The major themes and respective interpretations are presented as follows.

(a) Administrative challenges: Teachers perceived the implementation of experiential learning as not cost-efficient due to inadequate funding. One teacher expressed, "I see financial burden in getting the necessary TLMs and securing funds for activities like excursions as a major challenge." Another teacher highlighted, "The lack of autonomy is an issue." The teachers further underlined limited time to syllabus completion and preparation for summative exams as a significant challenge. As a result, the lack of appropriate support and availability of resources make activities like project work stressful.

(b) Perception of burden: The shortage of teaching staff and high pupil-teacher ratio are perceived as major challenges in implementing experiential learning. One teacher noted, "The non-educational burden on teachers is an issue." Another emphasised, "The lack of appropriate CPD* is a major challenge", which can be linked with the perceptions on ATL and the view of activities as complimentary to conventional teaching.

(c) Manpower mobility: Three teachers identified this as a challenge in the context of experiential learning. One teacher stated, "I have noticed the lack of adequate and qualified personnel is a challenge in our experiential learning programmes." Another shared, "The frequently changing positions and deputations can disturb continuity in experiential learning."

(d) Integrating lab with classroom: The integration of laboratory with the classroom is crucial for experiential learning in science. One teacher noted, "In science, integrating the

lab with the classroom will ensure simultaneous experimentation during lessons." Additionally, the establishment of subject-specific laboratory is a major concern. Another teacher highlighted this by stating, "Having a dedicated lab space for each subject ensures the availability of relevant materials for the practical application of theoretical concepts."

(e) Complexity: The teachers' perceived experiential learning as a complex system, which needs a different assessment approach. One concern they shared was the reluctance of students to participate in activities. One teacher noted, "The experiential approach to science education may slow down the curriculum."

Discussion

The present research provided valuable insights into the current state and perceptions surrounding experiential learning in science education in government schools. The study revealed gap between the availability and accessibility of basic infrastructure compared to resources for curricular activities in providing essential resources crucial for the holistic development of students (see Figure 1). While co-curricular programmes and science exhibitions are prevalent, academic excursions are notably absent (see Table 1). Teachers perceive experiential learning as effective, aligning with findings in NEP 2020 and the National Curriculum Framework for Secondary Education 2023 (NCFSE 2023). However, uncertainties exist about certain methods, for example ATL, sports-integrated approach and hands-on learning, indicating a need for appropriate professional training, which is in support of studies conducted by Zhang and Campbell (2012) and Ernst (2013).

The unanimous agreement among students regarding the impact of their past experiences in understanding science, coupled with high agreement percentages in favour of hands-on experiences and curricular

activities, underscores the instrumental role of experiential learning in science education. These findings align with the research of Burch, et al. (2016), Ergul, et. al. (2012) and Bates (2014). However, contrary to the recommendations of NEP 2020, which emphasise interdisciplinary approaches, especially the integration of sports, the continued reliance on rote learning and the absence of such approaches do not align with the findings of Beane (1997) and Dewey (1938), highlighting areas for improvement. The challenges faced by teachers in implementing experiential learning further elucidate administrative (Austin and Rust, 2015), perception-related and complexity-related difficulties, as explored in studies conducted by Kong (2021) and Funa and Prudente (2021). Addressing these challenges is essential for the effective implementation of experiential education in government schools of Mayurbhanj.

Conclusion and Educational Implications

The findings of this study highlight the strengths and weaknesses in infrastructure, resources, and the implementation of curricular activities, highlighting the need for improvements in various areas, such as accessibility and curricular opportunities. Despite the challenges faced by teachers

and students, there is positive perception of integrating experiential learning in science at the secondary stage.

While there is a strong emphasis on effective practices, including hands-on activities and real-world applications, significant gaps can be found in collaboration, reflective opportunities and addressing the diverse needs of learners. Addressing infrastructure gaps, providing resources, reducing the overreliance on rote memorisation, promoting interdisciplinary approaches, catering to all learners, and conducting teacher trainings are crucial. By leveraging these insights, an environment conducive to experiential learning can be created, consequently empowering students and fostering their overall development.

This study aims to provide an overview of the status of infrastructure, teacher and student perceptions, and current practices in implementing experiential science education at the secondary stage in Mayurbhanj district. It also explores the challenges perceived by teachers, which can help identify the necessary infrastructure and professional support required. The insights gained from students' and teachers' perceptions will offer a comprehensive understanding of the readiness towards the implementation of experiential learning and provide guidance for improvement at the ground level.

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Attention Deficit Hyperactivity Disorder (ADHD): Awareness, Attitudes, and Behavioural Responses among Aspiring Teachers in North East India

R. D. Padmavathy

Abstract

The global rate of attention deficit hyperactivity disorder (ADHD) among school-aged children, ranging from 3 to 17 years, is gradually increasing. Despite this growing prevalence, previous studies have highlighted a gap in research specifically related to ADHD and aspiring teachers. The present study aims to address this gap by examining the awareness, attitudes, and behavioural responses towards ADHD among aspiring teachers in North East India. The study seeks to assess their level of awareness, attitudes, and behavioural responses concerning ADHD. To gather data, the researcher employed a descriptive survey research design and a convenience sampling method, involving 88 aspiring teachers. Data collection utilised a self-constructed Knowledge and Awareness towards ADHD tool, in addition to the “attention deficit hyperactivity disorder (ADHD) Tool” developed by Jain and Gunthey (2013). The findings indicate that the aspiring teachers’ levels of awareness, attitude, and behaviour response towards ADHD are generally average. Specifically, 65% of the aspiring teachers demonstrated good knowledge, 77% exhibited a desirable attitude, and 75% showed good behaviour related to ADHD. Overall, 53% of the participants displayed an acceptable level of awareness, attitude, and behaviour towards ADHD. While aspiring teachers possess above-average knowledge about inattention, hyperactivity, and impulsivity, they struggle to clearly distinguish the specific characteristics of ADHD.

Keywords: Attention Deficit Hyperactivity Disorder, Awareness, attitude, behaviour, aspiring teachers, North East India

Introduction

Attention-Deficit Hyperactivity Disorder is a “neurodevelopmental disorder that presents significant challenges for individuals and their educators. It is characterised by persistent inattention, hyperactivity, and impulsivity, which can significantly impact an individual’s academic, social, and behavioural functioning” (Liang & Gao, 2016). The extant literature suggests that teachers’ knowledge and perceptions of ADHD can have a significant influence on the support and interventions provided to students affected by this disorder (Youssef et

al., 2015, Liang & Gao, 2016). Understanding the current state of awareness and attitudes among aspiring teachers in the North East Indian region is crucial, as their perspectives and actions can substantially impact the educational and social outcomes of children with ADHD (Norvilitis & Fang, 2005, Hong, 2008).

Although research on ADHD has been extensive, particularly in developed nations, there is a notable lack of understanding and awareness surrounding this condition in certain regions, and understanding how aspiring teachers perceive and respond to

ADHD is crucial, especially in regions like North East India where awareness may be limited. This study aims to investigate aspiring teachers' awareness, attitudes, and behavioural responses toward ADHD in the North East Indian context, as they play a crucial role in identifying, supporting, and advocating for students with such needs (Norvilitis & Fang, 2005; Youssef et al., 2015; Hong, 2008). It aims to shed light on their understanding of the disorder, their attitudes towards affected students, and their anticipated approaches to supporting these students within the classroom setting. This study is particularly significant as it explores a critical gap in the literature and provides valuable insights into pre-service teacher preparedness to support neuro-diverse learners in the North East Indian context.

Attention Deficit Hyperactivity Disorder (ADHD)

Attention Deficit Hyperactivity Disorder (ADHD) is a common neurodevelopmental disorder that greatly influences children's social skills, academic achievement, and overall well-being. It is characterised by recurrent patterns of impulsivity, hyperactivity, and inattention that hinder functioning or development (American Psychiatric Association, 2013).

Diagnostic and Statistical Manual of Mental Disorders (5th ed.) (DSM-5) defines "attention deficit hyperactivity disorder is characterised by a pattern of behaviour, present in multiple settings (e.g., school and home), that can result in performance issues in social, educational, or work settings. As in DSM-IV, symptoms will be divided into two categories of inattention and hyperactivity and impulsivity that include behaviours like failure to pay close attention to details, difficulty organizing tasks and activities, excessive talking, fidgeting, or an inability to remain seated in appropriate situations". Presented below a concise summary of the three categories detailed in the "Attention

Deficit Hyperactivity Disorder Tool" handbook authored by Jain and Gunthey (2013):

- **"Inattention"** in individuals with ADHD can manifest in several ways. They often fail to pay close attention to detail, resulting in careless mistakes in schoolwork or other activities. They may have difficulty sustaining attention on tasks or play activities and frequently do not seem to listen when spoken to directly. Following instructions and completing schoolwork, chores, or job duties can be challenging, and they often struggle with organizing tasks and activities. Additionally, they might avoid or dislike tasks that require prolonged mental effort, frequently lose items needed for tasks, and are easily distracted and forgetful in daily activities.
- **Hyperactivity** is characterised by behaviours such as fidgeting with hands or feet or squirming in their seat. They may get up from their seat when remaining seated is expected, run or climb inappropriately, and have trouble playing or engaging in leisure activities quietly. Individuals with ADHD are often described as being "on the go" or acting as if driven by a motor, and they may talk excessively.
- **Impulsivity** in ADHD is evident when individuals blurt out answers before questions are completed, have difficulty waiting their turn, and frequently interrupt or intrude on others".

Etiology and Risk Factors

ADHD has a complicated etiology that includes neurological, environmental, and hereditary components. According to genetic research, the heritability of ADHD ranges from 70% to 80%, indicating that the disorder is strongly heritable (Thapar et al., 2013). Low birth weight and environmental variables including stress, alcohol, or cigarette use during pregnancy have also been linked to a higher chance of having ADHD (Froehlich et al., 2011). According to Thapar and Cooper (2016), environmental factors like stress in the early years of life and prenatal exposure to chemicals may

also have an impact on its development. Neuroimaging studies have identified structural and functional abnormalities in brain regions related to attention and executive function, including the prefrontal cortex and basal ganglia (Cortese et al., 2012). Hoogman et al. (2017) have reported that the condition is associated with both structural and functional abnormalities in the brain, particularly in regions that are involved in reward processing, executive function, and attention. Comparing people with ADHD to controls in neuroimaging studies has revealed smaller volumes in the cerebellum, basal ganglia, and prefrontal cortex (Valera et al., 2007).

Role of Teachers in Supporting Students with ADHD

Teacher's role is very crucial and multifaceted; they are the ones who work with children closely for many hours. Teachers play a critical role in detecting, managing, and providing assistance for students with ADHD because they can spot probable signs and suspect whether a child is having ADHD. They foster an atmosphere in which children with ADHD can flourish intellectually, socially, and emotionally since they are important characters in their daily lives. Their engagement goes beyond scholastic teaching to include behavioural treatments, social-emotional support, and working in tandem with families and medical professionals. Concern about diagnosis and management next to parents; teachers play a key role in a student's life. In addition to doctors, medical professionals, psychologists, mental health providers, and educators play a pivotal role in diagnosing, intervening, and developing remedial strategies to support individuals' overall well-being and academic success. Educators are the one who recognise the symptoms of ADHD disorders first and bring notice to parents and others.

So, teachers must be given sound knowledge about ADHD and the intervention strategies. In consonance with lines Sax &

Kaut (2003) highlighted that teachers and other personnel in the school environment were the first persons who diagnosed ADHD problems in children. Kypriotaki & Manolitsis (2010) revealed that "teachers detect far more students with ADHD than the number expected from the norms based on the standardised ADHD rating scale".

Aspiring teachers are uniquely positioned to shape the future of education for students with ADHD, bringing fresh perspectives and innovative teaching strategies to the classroom. However, their effectiveness largely depends on their understanding of and attitudes towards the disorder (Mulholland et al., 2015). Many enter the field with misconceptions or limited knowledge about ADHD, which can lead to ineffective teaching strategies and potentially harmful attitudes (Bekle, 2004). Research has shown that teachers' attitudes significantly influence their classroom behaviour and interactions with affected students, with positive attitudes associated with more supportive practices and better outcomes (Ohan et al., 2008). To create inclusive environments, aspiring teachers need a comprehensive understanding of ADHD, including its symptoms, causes, and effective interventions (Martinussen et al., 2011). Their attitudes also influence their willingness to implement necessary accommodations and modifications, with open-mindedness more likely to result in the adoption of evidence-based strategies that improve student outcomes (Sherman et al., 2008). Recognizing the impact of their attitudes on students' self-esteem and self-efficacy is crucial, as supportive teachers can significantly enhance the overall well-being and academic success of students with ADHD (DuPaul & Weyandt, 2006). To ensure adequate preparation, teacher education programs should incorporate comprehensive training on ADHD and other neurodevelopmental disorders, addressing both factual knowledge and attitudes (Zentall & Javorsky, 2007). It is possible to establish more inclusive and supportive learning environments for all students, especially

those with ADHD, by encouraging aspiring instructors to have accurate knowledge and good attitudes.

Review on Prevalence of ADHD and its Comorbidities

ADHD is a neurodevelopmental condition that affects individuals worldwide, with prevalence rates demonstrating significant regional variability. This review synthesizes current literature on the prevalence of ADHD and its comorbidities, with a focus on global and regional trends, including insights from India.

Global Prevalence of ADHD

The prevalence of ADHD varies across regions due to differences in diagnostic criteria, cultural norms, and healthcare accessibility. In the United States, ADHD prevalence among children and adolescents ranges between 4% and 9.4% (Schoeman & De Klerk, 2017; Danielson et al., 2018). Higher rates are reported in the Middle East, including the United Arab Emirates (29.7%) and Saudi Arabia (16.4%) (Al-Ahmed, 2008). In Asia, Korea demonstrates ADHD prevalence rates of 7.1% to 71.9% in 2018 (Soe et al., 2022), while studies in China report a prevalence of 6.26% (Wang et al., 2017). In Japan, ADHD prevalence ranges from 0.1 to 8.1%, in Europe, ADHD affects approximately 7.2% of children and adolescents (Thomas et al., 2015), reflecting significant variability across countries. These statistics underscore the global impact of ADHD and the need for tailored interventions.

ADHD in India: Prevalence and Regional Variations

India presents a unique landscape for ADHD research due to its diverse population and socio-economic conditions. Research highlights the prevalence of ADHD and regional disparities, among children in Kashmir was recorded at 4.31% by Dar

(2015) and Sharma et al. (2020) reported 6.34% in Jammu. In North India, Bansal and Barman (2011) reported a prevalence of 6%, specific in New Delhi was reported as 6.4% by Yewatkar (2015). In Rajasthan, Suthar (2018) found a prevalence of 5.7%, while studies in Mumbai by Ajinkya et al., (2012) highlighted a higher prevalence of 12.3%, Nawabzada et al., (2022) documented the highest prevalence of 17.6%. In Tamil Nadu, research by Venkata and Panicker (2013) found a prevalence of 11.33%, with subsequent studies by Catherine et al. (2019) estimating rates at 8.8%. Bangalore studies varied, with Mannapur (2016) reported ADHD increased from 2.3%, to 7%, and Ramya (2017) noting a lower rate of 1.3%. Manjunath et al., (2015) reported a notably higher prevalence of 14.4% in Karnataka, with Joshi & Angolkar (2018) documenting 5.29%, in Kerala Jaisooriya found 7.52 % school going students affected by ADHD and Sukanya & Vikraman (2021) finding revealed a prevalence rate of 6% among children aged 4-5 years. In Odisha, Naik (2015) identified a prevalence of 3.66%, while studies in Andhra Pradesh by Kiranmayi (2018) recorded 5.9%. Lastly, In Assam, Ghosh (2016, 2018) recorded a prevalence of 12.66%. These findings underscore the variability in ADHD prevalence across India, necessitating region-specific approaches to diagnosis and intervention. Estimates of ADHD prevalence vary widely across regions, ranging from 1.6% to 17.9% (Srinath et al., 2005; Malhotra & Pradhan 2013).

ADHD Comorbidities and Regional Insights

ADHD frequently co-occurs with other psychiatric conditions, with comorbidity rates ranging from 60% to 100% globally (Reale et al., 2017). Oppositional Defiant Disorder (ODD) is the most common comorbidity, affecting 40% to 60% of children with ADHD (Noordermeer et al., 2017). The mixed subtype of ADHD is particularly associated with higher comorbidity rates compared

to the inattentive subtype (Biederman et al., 1991, as cited in Ghosh et al., 2017). In India, comorbidity rates range from 40% to 86.3% and the most common was learning disability (Venkatesh et al., 2012). Geographical differences in comorbidity rates reflect environmental, cultural, and systemic factors influencing ADHD diagnosis and management. For instance, a meta-analysis highlights a prevalence of 5.9% among European children and adolescents (Faraone et al., 2021), while in Asia, lower rates among adults (2.58%) are reported (Song et al., 2021). Higher rates were observed in North America, while lower rates were reported in Asia, highlighting the need for further research into the factors contributing to these geographical differences. Understanding these variations is crucial for developing culturally sensitive diagnostic and treatment strategies.

These studies collectively indicate that ADHD affects children and adults worldwide, with prevalence rates varying across regions and age groups. The global burden of ADHD appears to be substantial, highlighting the need for continued research, early detection, and effective interventions. These findings emphasise the importance of comprehensive assessment and individualised treatment approaches. The significant geographic variations in prevalence underscore the need to consider cultural and environmental factors in ADHD research and clinical practice. Furthermore, there is a growing need for increased awareness, accurate diagnosis, and effective management strategies to address ADHD and its broader implications on mental health and development across the lifespan. There needs further research to understand the prevalence of region-specific ADHD and its factors that challenge the environment, diagnosis and remedial interventions too.

Rationale for the Study

The Attention-Deficit/Hyperactivity Disorder (ADHD) research in India reveals

a complex and multifaceted understanding of neurological diversity and healthcare challenges. A comprehensive review of ADHD prevalence across Indian states demonstrates remarkable regional variations, with rates oscillating between 1.3% and 17.6%, as documented by pioneering researchers like Nawabzada et al. (2022) in Mumbai and Manjunath (2015) in Karnataka. Geographically, research has encompassed 15 diverse states and regions, with a pronounced focus on South and West Indian territories, reflecting nuanced regional research priorities and methodological approaches. The temporal trajectory of ADHD research from 2010 to 2022 illuminates a consistent and evolving scientific interest in understanding prevalence and neurological diversity. Most studies converge on an average prevalence range of 5-12%, underscoring the intricate neurological profiles within the Indian population. These variations are not merely statistical anomalies but profound reflections of divergent diagnostic methodologies, complex cultural perspectives, and variable healthcare infrastructures across different regions.

While Western countries have extensively advanced ADHD research in diagnosis, prevalence, and management, Indian research remains comparatively nascent but demonstrates a promising growth trajectory. The emerging discourse highlights significant disparities and the critical need for localized, context-sensitive intervention strategies. The observed variability emphasizes the importance of developing consistent diagnostic standards and region-specific approaches that acknowledge the unique socio-cultural and medical contexts of different Indian states.

A pivotal research gap emerges in understanding the preparedness of aspiring teachers, particularly those specializing in inclusive education. Despite growing ADHD awareness, limited research has systematically explored the knowledge, attitudes, and behaviors of future educators

who will be instrumental in supporting students with neurodevelopmental disorders. India's persistent teacher shortage further accentuates the importance of equipping aspiring educators with comprehensive understanding and practical skills to address diverse learning needs.

The current study aims to bridge this critical research gap by meticulously examining aspiring teachers' knowledge, attitudes, and practices concerning ADHD. By focusing on educators specializing in inclusive education, the research seeks to uncover their readiness to identify, understand, and support students with ADHD. This investigation is strategically positioned to influence future educational policies, develop targeted training programs, and foster greater awareness and competence among prospective teachers.

Ultimately, this research represents a significant step towards creating more responsive, understanding, and effective educational environments. By addressing the multifaceted challenges of ADHD identification, understanding, and support, the study promises to contribute substantively to the evolving landscape of inclusive education in India, potentially transforming educational experiences for neurodivergent students and setting new benchmarks for teacher preparation and support.

Operational definitions of the terms

- **Awareness:** Awareness refers to the extent of knowledge that aspiring teachers possess about attention deficit hyperactivity disorder. It includes their understanding of ADHD's symptoms, causes, impact on learning, and available interventions. In this study, awareness is operationalised by a survey questionnaire consisting of 15 items that assess general information about ADHD's nature, causes, potential outcomes, and the strategies used for its treatment and management. A higher score on the awareness scale indicates a greater level of understanding of ADHD.

- **Attitudes:** Attitudes refer to the beliefs, perceptions, and emotional responses that aspiring teachers have towards students with ADHD. This includes their feelings of empathy, perceived competence in teaching ADHD students, and their level of comfort in managing ADHD-related challenges in the classroom. Attitudes are operationalised through a set of 10 items in the survey questionnaire, which assess whether aspiring teachers hold positive or negative views about ADHD and their readiness to work with students with ADHD. Responses are rated on a Likert scale to measure the strength and direction of their attitudes.
- **Behavioural Responses:** Behavioural responses refer to the actions or strategies that aspiring teachers are likely to adopt when interacting with students diagnosed with ADHD. This includes the willingness to implement specific teaching interventions, adjust classroom environments, or provide additional support tailored to ADHD students' needs. In this study, behavioural responses are operationalised through 10 items that assess participants' intended behaviours in response to ADHD-related scenarios. These items capture the extent to which aspiring teachers plan to adopt inclusive practices and interventions for ADHD students in their classrooms.
- **Aspiring teachers** in this context refer to individuals currently enrolled in education degree or certification programs with the intention of entering the teaching profession.

Research Objectives of the study

- To assess the level of awareness, attitudes, and behavioural responses towards attention deficit hyperactivity disorder among aspiring teachers in Northeast India.
- To evaluate aspiring teachers' understanding of the three core categories of ADHD—impulsivity, hyperactivity, and inattention

Research Design

The study adopted a descriptive survey research design to systematically investigate the awareness, attitudes, and behavioural responses among aspiring teachers regarding ADHD. This design was chosen for its effectiveness in gathering comprehensive data about the current state of aspiring teachers' understanding and preparedness for handling ADHD in educational settings.

Population of the study

The target population consisted of aspiring teachers in North East India who were enrolled in education degree or certification programs, specifically those pursuing inclusive education courses as part of their curriculum.

Sampling Technique and Sample of the study

The study utilized convenience sampling in the Department of Education at Tezpur University, a rural institution situated 15 kilometres east of Tezpur along the Brahmaputra River. The sampling approach prioritized participant accessibility, time efficiency, and resource optimization. From 88 voluntarily recruited aspiring teachers, the sample consisted of 22 males (25%) and 66 females (75%), distributed across two age ranges: 35 participants (39.77%) aged 23-25 years and 53 participants (60.23%) aged 26-28 years. Despite facilitating data collection for Inclusive Education course participants, the method inherently limits representativeness and generalizability. The single rural institutional context demands cautious interpretation of findings, recognizing potential sampling biases when exploring ADHD awareness, attitudes, and behavioral responses among North East Indian aspiring teachers. Participant selection involved course instructor permissions, study announcement, and voluntary informed consent, strategically balancing research feasibility with methodological constraints.

Research Instrument

The study was guided by two primary objectives, each aligned with specific assessment tools. These complementary tools were selected to provide a comprehensive assessment of both the broad understanding of ADHD and the specific knowledge of its core manifestations among the study participants. In this study, two tools were used. They are

- "Awareness, Attitude and Behavioural Responses towards ADHD Scale," specifically constructed by the researcher for this purpose.
- The standardised "Attention Deficit Hyperactivity Disorder Tool" developed by Jain and Gunthey (2013).

Description of the Research Instrument

The ADHD Awareness, Attitude, and Behavioral Responses tool consists of 35 items across three dimensions: awareness (15 items), attitudes (10 items), and behavioral responses (10 items). Using a three-point scoring scale (agree: 2 points, don't know: 1 point, disagree: 0 points), the tool allows for a total possible score range of 0 to 70. Dimensional score ranges include awareness (0-30), attitudes (0-20), and behavioral responses (0-20). Higher scores indicate more comprehensive understanding, positive attitudes, and supportive behavioral responses towards ADHD, providing a nuanced assessment of participants' perspectives on the neurodevelopmental disorder. The tool's content validity was established through expert review and validation, ensuring that the items adequately represent the intended constructs and dimensions of ADHD understanding among aspiring teachers. Test-retest reliability, which was measured at 76.6%, indicates a substantial level of consistency over time, demonstrating the tool's reliability in capturing stable and repeatable responses regarding ADHD awareness, attitudes, and behavioral responses.

A comprehensive 48-item diagnostic instrument “Attention Deficit Hyperactivity Disorder Tool” by Jain and Gunthey (2013) meticulously designed to examine ADHD symptoms across three critical dimensions: inattention, hyperactivity, and impulsivity. The scoring methodology involves three-point categorical responses: Never (0), Sometimes (1), and Often (2), with a maximum possible score of 112. Test-retest reliability and criterion-related validity were calculated for individual subscales and total scores, ensuring comprehensive psychometric evaluation of the ADHD diagnostic tool. By providing a structured, systematic framework, both the tools enable researchers to comprehensively analyze the complex manifestations of ADHD, offering nuanced insights into the multifaceted

behavioral and cognitive characteristics associated with the neurodevelopmental disorder. The instrument’s comprehensive approach facilitates a deeper understanding of symptom variations, supporting more precise diagnostic assessments and research investigations (Jain and Gunthey, 2012, 2013).

Data Analysis and Interpretation of the Results

The research objectives are analysed using SPSS 25 and the results are presented below:

- **Objective 1: To assess the level of awareness, attitudes, and behavioural responses towards attention deficit hyperactivity disorder (ADHD) among aspiring teachers in Northeast India.**

Table 1: Showing the relative distribution of aspiring teachers’ mean of various levels of Awareness, attitude, and behaviour towards ADHD

ADHD		Above Average	Average	Below Average	Total
Awareness	N (%)	13(14.7)	55(62.5)	20(22.8)	88(100)
	Mean	22.35	26	13.30	20.83
Attitude	N (%)	9(10)	68(77)	11(13)	88(100)
	Mean	8.18	17.58	12.71	12.64
Behaviour	N (%)	7(8)	66(75)	15(17)	88(100)
	Mean	12.20	17.43	14.92	14.66
Overall ADHD	N (%)	31(35)	47(53)	10(12)	88(100)
	Mean	36.70	54.52	46.34	48.13

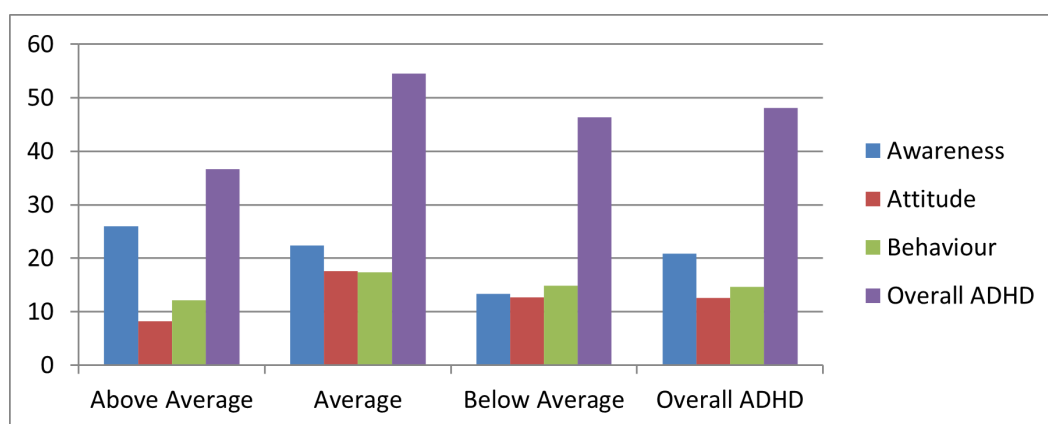


Figure 1: Showing the relative distribution of aspiring teachers’ mean of various levels of Awareness, attitude, behaviour towards attention deficit hyperactivity disorder

As inferred from Table 1 and Figure 1, the data analysis reveals varying levels of awareness, attitudes, and behavioural responses among the 88 aspiring teachers studied. In terms of awareness, the majority (62.5%, n=55) demonstrated average levels with a mean score of 26.0, while 14.7% (n=13) showed above-average awareness with a mean score of 22.35, and 22.8% (n=20) displayed below-average awareness with a mean score of 13.30. The overall mean awareness score was 20.83.

Regarding attitudes towards ADHD, a substantial majority (77%, n=68) showed average levels with a mean score of 17.58. Only 10% (n=9) demonstrated above-average attitudes with a mean score of 8.18, while 13% (n=11) showed below-average attitudes with a mean score of 12.71. The overall mean attitude score was 12.64.

In behavioural responses, 75% (n=66) of participants demonstrated average levels with a mean score of 17.43. A smaller proportion showed above-average (8%, n=7)

and below-average (17%, n=15) behavioural responses, with mean scores of 12.20 and 14.92 respectively. The overall mean behavioural score was 14.66.

The overall ADHD understanding shows that more than half of the participants (53%, n=47) demonstrated average levels with a mean score of 54.52. About one-third (35%, n=31) showed above-average overall understanding with a mean score of 36.70, while 12% (n=10) displayed below-average overall understanding with a mean score of 46.34. The overall mean score across all dimensions was 48.13.

These findings suggest that while the majority of aspiring teachers demonstrate average levels across all dimensions, there is considerable room for improvement, particularly in raising awareness and enhancing behavioural responses to ADHD.

- **Objective 2: To evaluate aspiring teachers' understanding of the three core categories of ADHD—impulsivity, hyperactivity, and inattention**

Table 2: Showing the relative distribution of aspiring teachers' mean of various levels of inattention, hyperactivity and impulsivity

ADHD		Above Average	Average	Below Average	Total
Inattention	N(%)	69(78.4)	19(21.6)	0	88(100)
	Mean	32.47	23.75	0	25.64
Hyperactivity	N(%)	78(88.7)	10(11.3)	0	88(100)
	Mean	25.90	18.40	0	25.05
Impulsivity	N(%)	48(54.5)	17(19.3)	23(26.1)	88(100)
	Mean	24.33	18.18	13.61	20.34

This table 2 presents data on aspiring teachers' distribution across different levels of ADHD-related symptoms: inattention, hyperactivity, and impulsivity, as well as their mean scores in each category. Here's an interpretation of the findings:

Inattention:

A significant majority (78.4%) of aspiring teachers scored in the "Above Average" range, while 21.6% scored in the "Average" range. None scored "Below Average." The

mean scores for inattention are 32.47 for the "Above Average" group and 23.75 for the "Average" group, with an overall mean score of 25.64 across all participants. This suggests that inattention is relatively high among these aspiring teachers.

Hyperactivity:

88.7% of aspiring teachers fall in the "Above Average" range for hyperactivity, with only 11.3% in the "Average" range, and no participants in the "Below Average" category.

The mean scores for hyperactivity are 25.90 for the “Above Average” group and 18.40 for the “Average” group, resulting in an overall mean of 25.05. This indicates a high level of hyperactivity within this group.

Impulsivity:

The distribution for impulsivity is more varied: 54.5% are in the “Above Average” range, 19.3% in the “Average” range, and 26.1% in the “Below Average” range. The mean scores for impulsivity are 24.33 (“Above Average”), 18.18 (“Average”), and 13.61 (“Below Average”), with an overall mean of 20.34. This variability shows that impulsivity levels differ more significantly compared to inattention and hyperactivity.

Aspiring teachers show higher tendencies for inattention and hyperactivity, as reflected in their predominantly “Above Average” scores and higher mean values, while impulsivity scores are more spread across different levels, indicating a wider range of impulsivity tendencies among the group.

Major Findings and Discussion

The study provides insight into aspiring teachers’ awareness, attitudes, and behavioural responses towards attention deficit hyperactivity disorder (ADHD). The results indicate that while a majority of aspiring teachers exhibit general awareness and favourable attitudes toward ADHD, their understanding of specific ADHD characteristics remains limited, echoing findings from previous research.

Awareness of ADHD

The study findings reveal that the overall mean awareness score among aspiring teachers was 20.83, indicating moderate awareness levels. This aligns with the findings of Al-Ahmad et al. (2008) investigated ADHD prevalence among male primary school children, reporting significant factors associated with the disorder. However, this result contrasts with earlier studies, such as

Amiri et al. (2017) and Jimoh (2014), which documented lower awareness levels among aspiring teachers. This disparity could signify improvements in awareness over time, possibly influenced by increased emphasis on neurodevelopmental disorders in educational policies or cultural shifts toward recognizing diverse learning needs. It also highlights regional differences and suggests that enhanced teacher training programs in certain areas may have contributed to this positive trend.

Attitudes Toward ADHD

The overall mean attitude score of 12.64 reflects moderate but predominantly positive attitudes toward ADHD among aspiring teachers. Such favourable attitudes are a positive development, as previous research by Ghanizadeh et al., (2006) and Al-Omari et al., (2014) highlighted less supportive attitudes among educators, often rooted in stigma and misconceptions about ADHD. The current findings suggest that recent advocacy efforts, awareness campaigns, and educational reforms focusing on inclusivity might be shifting attitudes in a positive direction. These improved attitudes are significant, as they influence the willingness of teachers to provide equitable support for ADHD students, which is critical for fostering an inclusive classroom environment (Trimmer, 2013).

Behavioral Responses to ADHD

The study indicates that aspiring teachers exhibited predominantly positive behavioral responses to ADHD, reflecting their readiness to engage with ADHD students effectively. This is a notable improvement compared to the findings of Jimoh (2014), who observed inadequate behavioral responses among teachers in similar contexts. The current findings suggest that aspiring teachers in this study may have been better equipped with practical strategies for managing ADHD in the classroom. Such readiness might be attributed to the growing emphasis on

experiential learning in teacher training, where prospective educators are exposed to case studies, simulations, and practical interventions designed for students with special educational needs.

Understanding ADHD-Related Symptoms

The findings revealed that aspiring teachers demonstrated a higher-than-average tendency to recognize inattention and hyperactivity symptoms, with most participants scoring in the “Above Average” range for these categories. However, their ability to identify impulsivity symptoms was more varied. This discrepancy mirrors the observations of Ghosh et al. (2018), who noted that teachers often struggle to differentiate between specific ADHD symptoms, even when general awareness is adequate. Such challenges highlight a gap in targeted training, as an inability to distinguish among ADHD symptoms could limit the ability to implement effective classroom strategies or provide tailored support for individual students.

Gap Between General and Specific Knowledge

The study underscores a critical gap between general awareness and specific knowledge about ADHD. While aspiring teachers showed an overall awareness of ADHD tendencies, they struggled to identify and differentiate specific symptoms such as inattention, hyperactivity, and impulsivity. This finding is consistent with Ghosh et al. (2018), who argued that general awareness does not always translate into practical competence in recognizing or managing ADHD behaviours. This discrepancy calls for a more applied approach in teacher education programs, incorporating hands-on training, case-based learning, and exposure to real-life classroom scenarios involving ADHD students. Enhancing this experiential aspect could bridge the gap between theoretical

knowledge and practical application, enabling teachers to respond more effectively to the diverse needs of students with ADHD (Trimmer, 2013).

These findings collectively emphasize the importance of evolving teacher education curricula to integrate both theoretical and experiential learning components, ensuring that aspiring teachers are not only aware of ADHD but are also equipped to address its multifaceted challenges in the classroom.

Implications and Recommendations

The findings suggest an encouraging shift towards positive attitudes and enhancing specific awareness of ADHD among prospective teachers, which is a foundational step in creating inclusive classrooms. However, the limited understanding of specific ADHD symptoms highlights the need for targeted interventions within teacher education programs. More practical experiences, such as case studies, role-play, and hands-on interactions with students with ADHD, could better equip aspiring teachers to distinguish ADHD symptoms and respond more effectively in real-world scenarios.

Future research could examine how prospective teachers’ knowledge gaps impact their confidence in managing ADHD-related behaviours and explore methods to integrate symptom-specific training into the curriculum, perhaps through workshops or collaborative projects with special education professionals. Enhancing both general awareness and specific knowledge will be crucial to fostering a classroom environment where students with ADHD can thrive.

Conclusion

To conclude, ADHD is a neuropsychiatric disorder prevalent in society, particularly among school students and causes damage to the development of the individual quality of life and social functioning. It affects the school

students more because it starts in the early ages of life and continues throughout the life of an individual and leads to poor academic achievement too. If it is not identified, attended and provided intervention at the right time it may impact the Inclusive education policy. In this study, aspiring teachers' awareness, attitude, and behavioural responses towards attention deficit hyperactivity disorder is assessed. Many students have conducted in the past to understand the ADHD of in-service and pre-service undergraduate teachers, knowledge, and awareness about ADHD. However, researchers have not come across any studies that examine teacher education pursuing inclusive education as a

course as a sample. One of the current study's shortcomings is convenience sampling and the sample size is restricted to only 88 aspiring teachers who willingly participated in this study. More studies to be conducted to know the awareness and misconceptions about the general people too. The aspiring teachers need considerable training in understanding the process of diagnosis and symptoms. So, in future research, more samples should be taken to obtain a deeper understanding of the disorder and ways to overcome the ADHD issues. In addition to that, how teachers' knowledge about ADHD impacts the psychological, behavioural and educational aspects of the learners.

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Emotional Social Intelligence and Gardner's Interpersonal and Intrapersonal Intelligence: A Conceptual Analysis

Sindhu K*, Ampili Aravind**

Abstract

Howard Gardner's Theory of Multiple Intelligences, particularly interpersonal and intrapersonal intelligence, aligns with the concept of Emotional Social Intelligence (ESI). Interpersonal intelligence refers to the ability to understand others, akin to social intelligence, whereas intrapersonal intelligence, often termed self-psychological intelligence, is associated with emotional intelligence. Research studies indicate that socially oriented intelligence encompasses the capacity to assess social situations through the effective application of emotional intelligence. Social intelligence includes self-awareness and self-regulation as its key components. This paper explores the relationship between Gardner's interpersonal and intrapersonal intelligence and the broader constructs of ESI.

Keywords: Emotional intelligence, Emotional Social Intelligence (ESI), social intelligence, multiple intelligence, interpersonal intelligence and intrapersonal intelligence

Introduction

'Emotional strength' was a concept developed by Abraham Maslow (1950). The term 'emotional intelligence' appears to have originated in a study by Michael Beldoch in 1964. However, it gained prominence following the publication of Daniel Goleman's book, *Emotional Intelligence: Why It Can Matter More Than IQ* (1995). The term 'social intelligence' was coined by Edward Thorndike in 1920. In his 2006 book *Social Intelligence: The New Science of Human Relationships*, Goleman explores social intelligence as a developing field of study that significantly influences how we interact with one another. Gardner in his book *Frames of Mind: The Theory of Multiple Intelligences* (1983) emphasises that people possess different types of intelligence. He clarifies that interpersonal and intrapersonal intelligence

form the foundation of his understanding of personal intelligence. According to his theory of multiple intelligence, interpersonal and intrapersonal intelligence are closely related subcategories of intelligence. The latter focuses on self-awareness and the ability to control one's own emotions, complementing emotional intelligence. On the contrary, the former relates to understanding and effectively interacting with others, which is strongly connected with social intelligence.

Emotional Social Intelligence: An Overview

Carolyn Saarni (1990) listed eight interconnected social and emotional qualities that together define emotional competence. According to research studies conducted by Ravuen Bar-On (1988, 1997 and 2000), ESI comprises various intrapersonal and

interpersonal capabilities and skills that work together to determine appropriate behaviour. In his model, Bar-On argues that this construct should be referred to as ESI rather than merely social intelligence.

The ability to identify and regulate one's own and other people's emotions is commonly referred to as emotional intelligence. The term 'emotional intelligence' was introduced by Mayer and et al. in their 2004 study, wherein they described it as the ability to understand and regulate emotions within oneself and while interacting with others. It is the ability to distinguish between signals and use this information to regulate thoughts and behaviours. They added that socially oriented intelligence refers to the application of emotional intelligence in social interactions. It includes the intelligence to judge social situations and build relationships.

Goleman (1995) identified self-awareness, empathy, motivation, social skills and self-regulation as the components of emotional intelligence. In 2000, he refined his model by categorizing it into four broad areas — relationship management, self-management, societal awareness and self-awareness. Understanding social dynamics, responding to them appropriately and fostering meaningful relationships are the components of social intelligence. The integration of emotional and social intelligence is commonly referred to as Emotional Social Intelligence (ESI), highlighting their complementary nature.

Gardener's Theory of Multiple Intelligences

Howard Gardner, in his 1983 *Frames of Mind* in 1983, introduced the concept of multiple intelligences, challenging the idea of a single IQ. According to Gardner, human intelligence is multidimensional and include eight different forms, i.e., linguistic, spatial, musical, logical-mathematical, bodily-kinesthetic, naturalistic, interpersonal and intrapersonal intelligence.

Intelligence, particularly significant to this paper, is interpersonal intelligence, which

refers to the ability to understand and interact effectively with others based on their requirements. This type of intelligence serves as the foundation of all social relationships, interpersonal interactions and communication.

Intrapersonal Intelligence, on the other hand, involves self-awareness, critical thinking and the ability to regulate one's own emotions, as well as those of others. It also helps people to understand their capabilities and assess where they stand in terms of needs, emotions and passion.

Interpersonal Intelligence and Emotional Social Intelligence

Gardener's concept of interpersonal intelligence aligns with the emotional and social aspects of intelligence as it emphasizes understanding and interacting with others. Interpersonal intelligence is present in individuals who are able to build good relationships with others and demonstrate empathy, awareness of desires and needs, and social adaptability.

ESI, particularly the elements of empathy and social skills, reiterate the attributes of interpersonal intelligence. Central to both frameworks is the ability to recognise and respond to the emotions of others. Since these skills complement each other, a person with high interpersonal intelligence is also likely to possess strong emotional and social intelligence.

Intrapersonal Intelligence and Emotional Intelligence

Gardener's intrapersonal intelligence is closely linked to the self-awareness and self-regulation components of emotional intelligence. Individuals with high intrapersonal intelligence are skilled at self-analysis, understanding their emotions, motivations and reactions. This self-awareness is crucial in the emotional intelligence model as it enables them to regulate their emotions and manage expressions effectively.

Interpersonal Intelligence and Social Intelligence

The ability to understand and communicate with others is a common trait of both social and interpersonal intelligence. Interpersonal intelligence, a component of Gardner's Theory of Multiple Intelligences, refers to the ability to consider others and respond appropriately to their needs. While social intelligence involves understanding social frameworks and behaviour, interpersonal intelligence mainly focuses on interaction between two persons or one-on-one interactions. When combined, these cognitive abilities enhance interpersonal communication, empathy and relationship.

Relationship between ESI and Gardner's Intelligence

The intersection between ESI and Gardner's interpersonal and intrapersonal intelligences suggests that these concepts are not separate but interrelated. ESI can be viewed as a bridge between interpersonal and intrapersonal intelligence as it involves self-regulation and effective social interactions.

From this perspective, we get a better understanding of the relationship between these two concepts and how they impact human capabilities—individually, as well as collectively—in areas like leadership, teamwork performance, and communication. For instance, individuals with strong ESI can navigate complex interpersonal relationships, make decisions on the basis of their emotional intelligence and build trust in others. Additionally, they excel in

self-management, emotional regulation and stress management—the key factors that enhance productivity across various fields.

Conclusion

The connection between emotional intelligence, social intelligence, and Gardner's interpersonal and intrapersonal intelligence offers a comprehensive view of human potential in regulating and understanding emotions, as well as functioning within social structures. Goleman identifies self-regulation, motivation, communication skills, empathy and self-awareness as key components of emotional intelligence. This aligns with Gardner's theories of intrapersonal and interpersonal intelligence, which focus on the ability to understand oneself and engage with others in a productive way.

According to Bar-On's concept of ESI, these two forms of intelligence are integrated. Interpersonal intelligence relates to social intelligence as both involve the ability to understand and navigate interactions. However, while interpersonal intelligence focuses on individual interactions, social intelligence addresses people in groups. Intrapersonal intelligence is quite similar to one of the aspects of emotional intelligence, which helps a person control one's emotions and actions. The application of these concepts enhances understanding about people, promotes self-regulation of emotions, controls social behaviour, and strengthens both individual and collaborative relationships, as well as effective leadership.

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The Indian Educational TV: Outreach, Perceptions and Preferences

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Abstract

This research paper is based on a dipstick survey aimed at understanding the role of educational television in improving access to educational opportunities for students living in remote areas in India. The study investigates the outreach of educational TV, with special focus on analysing the awareness of PM e Vidya DTH TV channels among students across geographical areas, gender and age groups. It further explores the role of educational TV during the COVID-19 pandemic and investigates perceptions towards educational TV, along with varying preferences for types of eContent among teachers, students and parents regarding its content. The data were collected from 13 states and two union territories, primarily involving responses from school-going children in rural and urban areas, as well as their teachers and parents. The study employed a descriptive survey research design and adopted a quantitative approach to analyse the data gathered through online survey questionnaires. It was found that educational TV programmes supported the educational needs of 89.7% students during COVID-19. Additionally, a significantly higher percentage of students (77.66%) compared to teachers (65.06%) agreed that eContent is beneficial for learning.

Keywords: Educational television, outreach, awareness, perception, preferences, PM eVidya, COVID-19

Introduction

With advancements in educational technology, disruptive technologies like augmented reality and virtual reality have redefined the teaching-learning landscape, creating dynamic and immersive educational experiences. Yet, amidst this wave of innovation, the familiar medium of educational television remains a steadfast and valuable tool. While relying on traditional technologies like television and radio in times of the Internet might seem like revisiting the 1950s-70s, considering the significant digital divide, television can emerge as an effective audio-video aid for school-going children.

According to MacGregor (2007), "Television is a powerful medium with key roles to play in education—in providing news and

information, including about education issues, policies and developments; in the form of dramas, soap operas, and other programmes with educational messages; and in the delivery of educational support programmes to the public and to schools." A vital role of television is to assist children in learning moral values through the portrayal of characters in cartoon shows and TV series, which can have a long-term positive impact on their development (Joshi, et al., 2020).

The importance of television was further realised in developing countries like India, where the COVID-19 pandemic disrupted the mainstream education system without sufficient time to prepare adequately for remote learning. In response, educational institutions worldwide adopted hybrid teaching and learning methods, incorporating

television as a means to reach students and ensure continued access to high-quality instruction (Morgan, 2020). Bell, et al. (2020) assert that television and radio broadcasts have significant potential to reach a vast number of learners, particularly those who are most vulnerable. During the COVID-19 pandemic, Mexico's Aprende en Casa (Learning at Home) programme ensured educational continuity for 25 million students by utilizing educational TV broadcasts and online platforms, supplemented by printed materials for areas with limited Internet access (Ripani and Zucchetti, 2020).

In India, a set of 34 SWAYAM Prabha DTH TV channels played a crucial role in sustaining education during the pandemic, highlighting the potential of television as an effective educational tool. The success of SWAYAM Prabha DTH TV channels during this period catalysed a significant shift in India's educational landscape, reinforcing the importance of television in reaching students with limited digital access. Leveraging Direct-to-Home (DTH) channels to disseminate educational content, in particular, has the potential to bridge gaps in accessing quality education, reduce the digital divide and address challenges related to scale, diversity and equity. The National Education Policy 2020 (NEP 2020) advocates the extensive use of technology in online and digital education to promote equity (Para 24.2).

- Extensive use of existing mass media, such as television, radio and community radio for telecasts and broadcasts, to address the digital divide and reach a substantial section of population whose digital access is highly limited (Para 24.4).
- Leveraging technology to strengthen adult education through satellite-based TV channels (Para 21.10)
- Telecasting programs for Anganwadi workers/teachers through digital/distance mode using DTH channels (Para 1.7).

Indian Educational TV: Major Initiatives

Since the inception of television network in independent India, several important projects have been launched, such as the Secondary School Television Project (1961), Delhi Agriculture Television (DATV) Project (Krishi Darshan, 1966), Satellite Instructional Television Experiment (SITE) (1975), Post-SITE Project (1977), Indian National Satellite (INSAT) Project (1982), UGC's Higher Education Television Project (HETV) (1984), IGNOU's Doordarshan Telecast (1991) and Gyan Darshan educational channel (2000) (Vyas, Sharma & Kumar, 2002). The extensive use of DTH TV channels for educational purposes, utilizing GSAT satellite technology, began in 2017 under the Department of Higher Education, Ministry of Education (formerly, the Ministry of Human Resource Development), through the SWAYAM Prabha initiative, a group of 34 DTH channels (now, 40) dedicated to broadcasting high-quality educational programmes via the GSAT-15 satellite, ensuring 24×7 access to quality education. The educational content broadcast is largely aligned with standard curricula and sourced from renowned educational institutions and organisations of India, such as the National Programme on Technology Enhanced Learning (NPTEL), Indian Institutes of Technology (IITs), University Grants Commission (UGC), Indira Gandhi National Open University (IGNOU), Consortium for Educational Communication (CEC), National Institute of Open Schooling (NIOS) and the National Council of Educational Research and Training (NCERT). As a part of this initiative, a channel named Kishore Manch, run by NCERT, is exclusively dedicated to the telecast of e-content related to school education.

Many educational initiatives, including SWAYAM Prabha, DIKSHA and NISHTHA have been leveraged in India throughout pre- and

post-COVID periods. The Government of India (GOI) recognised the potential of educational television as a means to engage school-going children during the pandemic, which caused significant disruptions to students' education. To address this, both national and state governments implemented educational television as a key initiative to support students' education during the crisis (Jena, 2020). Consequently, a comprehensive initiative called PM eVidya was launched on 17 May 2020, as part of the AtmaNirbhar Bharat Abhiyan, unifying all efforts related to digital, online and on-air education to enable multi-mode access to learning.

The initiative was introduced under the Department of School Education and Literacy (DoSE&L), Ministry of Education, GoI, with the objective of ensuring the continuity of children's education during the COVID-19 pandemic and providing multimodal access to quality e-Content at their doorsteps, both during and after the crisis. Among the various integrated components, the PM eVidya initiative included 12 DTH TV channels under the One Class-One Channel project for Classes 1 to 12, which was an unprecedented step.

Building on the success of these 12 DTH TV channels, the government announced a major expansion of the programme during the Union Budget 2022-23 presented on 1 February 2022. This expansion aimed to increase the One Class-One TV Channel initiative from 12 to 200 TV channels to impart supplementary teaching, build a resilient mechanism for education delivery amid the pandemic, enable all states to provide supplementary education in various Indian languages and bridge the digital divide across India. On 9 March 2024, the Ministry of Education, GoI, launched 200 PM eVidya DTH TV channels, marking a significant milestone in expanding educational broadcasting resources and enhancing digital learning accessibility across the country.

PM eVidya DTH TV Channels: Pedagogical Perspective and Scope

The development of e-Content and its integration into teaching and learning depend on the nature of the content and the target learners. The systematic development of quality e-Content, particularly for PM eVidya DTH TV channels, follows established instructional design frameworks, with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model serving as a foundational approach to ensure alignment with learning objectives and audience needs. When integrating e-content into teaching and learning practices, the TPACK (Technological Pedagogical Content Knowledge) framework provides educators with a structured approach to effectively blend content knowledge, pedagogical strategies and technological tools (Source: <https://ciet.ncert.gov.in/dth>).

These channels telecast engaging and high-quality e-Content contributed by States and Union Territories, autonomous bodies, including NCERT, the Central Board of Secondary Education (CBSE), Navodaya Vidyalaya Samiti (NVS), Kendriya Vidyalaya Sangathan (KVS), National Institute of Open Schooling (NIOS), Ministry of Skill Development and Entrepreneurship (MSDE), Central Institute of Classical Tamil (CICT). These organisations develop and provide video content tailored to their target learners. The e-Content cover a wide spectrum, including school education (for all stages, i.e., 5+3+3+4), teacher education, vocational education, adult education and language learning. It is made available in 29 Indian languages, including Indian Sign Language (ISL), enabling learners from diverse linguistic backgrounds to access quality educational content. It aligns with NEP 2020 and its emphasis on multilingualism and mother tongue-based instruction.

The curricular video content is also available on DIKSHA portal and app as part of the resilient, coherent and multi-modal strategy recommended by NEP 2020. Additionally, the 200 PM eVidya DTH TV channels are being made available as simulcasts on YouTube. These channels also telecast live programmes and interactive sessions based on textbooks for Classes 1 to 12, as well as content on yoga, Manodarpan, Sahyog, online training on ICT and teaching-learning interventions for inclusive classrooms.

Review of Related Literature

Educational television has long been a thoroughly researched topic, with its cognitive, moral, affective and behavioral impacts widely acknowledged. Satyanarayana and Sesharatnam (2000) documented the UK Open University's adoption of television as an instructional tool, primarily in experimental settings to demonstrate tool usage and record important events.

Wartella, et al., (2015) conducted a study in the USA examining how parents of children below eight years of age engage with various forms of media. The findings indicated that parents were more likely to use traditional media, like television and books, while children were more inclined to use video games and smartphones.

In India, access to digital devices remains uneven. Only 4.4% rural households had access to computers, compared to 14.4% in urban areas. Similar findings have been observed in Internet access, with only 14.9% rural homes having access compared to 42% urban homes. Further, the survey indicated a poor level of digital literacy, with only 13% people above five years of age in rural habitations being able to use the Internet, compared to 37% in urban habitations (NSSO, 2017–18, GoI, 2020).

Aulia and Batubara (2021), in their study, reported that teachers found educational TV channels to be an effective medium for engaging students in online English learning through educational TV in rural schools of

Thailand during the COVID-19 pandemic. Similarly, Nwokedi, et al., (2022) examined the effectiveness of Interactive Radio (IR) and Interactive Television (ITV) programmes in enhancing life skills among out-of-school nomadic children in Nigeria. Using a quasi-experimental design with 470 participants, the findings of the study showed significant improvements in life skills for both IR and ITV groups, with ITV participants showing greater enhancement. The study recommended utilising both IR and ITV for educating out-of-school nomadic children, with a preference for ITV.

Research studies consistently demonstrate that television has proven to be a powerful educational tool, bridging learning gaps and transcending geographical barriers. Its significance is particularly evident in regions with limited digital infrastructure, where traditional technologies continue to play a crucial role in educational delivery. The persistent digital divide, coupled with television's demonstrated educational efficacy, underscores the need for investigating the reach, impact and potential of educational TV programmes in addressing educational disparities and enhancing learning outcomes across diverse socioeconomic contexts.

Significance of the Study

Assessing the efficacy of TV-based education holds substantial implications for educational policy, practice and research. Understanding the reach, awareness and impact of educational television programmes is crucial for making informed decisions regarding processes like resource allocation, programme design and pedagogical strategies. Moreover, in the context of digital transformation of education, assessing TV-based education provides insights into how technology can be strategically used to address educational disparities and improve learning outcomes. By examining the outreach, perceptions and preferences regarding educational television programmes,

this study aims to contribute to the ongoing discourse on innovative approaches to education, the equitable provision of learning opportunities for all students and bridging the digital divide.

Objectives

The objectives of the research study are as follows.

1. To study the outreach of educational TV in India across geographical areas, gender and age groups
2. To understand and assess the role that educational TV channels played in supporting students during the COVID-19 pandemic
3. To analyse the perceptions of teachers, students and parents regarding the quality and effectiveness of on-air educational TV programmes
4. To identify the preferred choices of teachers, parents and students regarding e-Content for educational TV programmes

Methodology

This study follows a descriptive survey research design based on a digital survey to assess the reach of DTH educational channels among students and to understand how various stakeholders, i.e., teachers, students and parents, perceive on-air educational TV programmes as a facilitator for learning and their preferred choices regarding such programmes. The data were

collected using self-administered online survey questionnaires (separately designed for students, parents and teachers) through Google Forms. The survey included students ($n = 681$) from Classes 1–12 studying in Kendriya Vidyalayas, Jawahar Navodaya Vidyalayas, ICSE schools, State board schools, as well as their parents ($n = 513$) and teachers ($n = 728$) from rural and urban areas of 13 states—Assam, Bihar, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Manipur, Meghalaya, Odisha, Punjab, Rajasthan, Uttarakhand, Uttar Pradesh and two Union Territories—Jammu & Kashmir and Delhi. A non-probability convenience sampling technique was used for data collection, and a quantitative approach was employed to analyse the data.

Results and Discussion

Outreach of Educational TV

Table 1(a) provides significant insights into TV viewership patterns across rural and urban areas of India, with a focus on educational TV. The data reveal that rural areas exhibit significantly higher engagement with educational TV (55.42%) compared to urban areas (36.89%). This highlights a notable disparity between rural and urban areas in terms of educational TV viewership, indicating the presence of a digital divide. Overall, the findings underscore the need for targeted strategies to enhance viewers' engagement with educational TV channels in both rural and urban areas.

Table 1(a): Area-wise outreach of educational TV

Geographical Area	Watch TV		Don't watch TV
	Watch Educational TV	Don't Watch Educational TV	
Rural	55.42%	33.73%	10.84%
Urban	36.89%	55.34%	7.77%
Total	41.41%	50.07%	8.52%
Total	91.48%	8.52%	

Table 1(b) reveals minimal disparities in educational TV viewership patterns on the basis of gender. The data show that viewership rate among males (42.03%) is slightly

higher than females (40.77%). However, it is important to note that nearly 50% of both males (49.86%) and females (50.30%) do not watch educational TV channels.

Table 1(b): Gender-wise outreach of educational TV

Gender	Watch TV		Don't watch TV
	Watch Educational TV	Don't Watch Educational TV	
Male	42.03%	49.86%	8.12%
Female	40.77%	50.30%	8.93%
Total	41.41%	50.07%	8.52%
Total	91.48%		8.52%

Table 1(c) highlights age-specific patterns in educational TV viewership. Among the three age groups, children aged 5–10 years show the highest viewership at 42.38%, closely followed by those aged 10–15 years at 41.89%. However, viewership among

those aged 15–20 years is slightly lower at 38.64%. The data suggest the need to tailor educational content to specific age groups, with a particular focus on addressing the interests and needs of all age groups.

Table 1(c): Age-wise outreach of educational TV

Age-Group (in years)	Watch TV		Don't watch TV
	Watch Educational TV	Don't Watch Educational TV	
5–10	42.38%	51.43%	6.19%
10–15	41.89%	51.62%	6.49%
15–20	38.64%	43.94%	17.42%
Total	41.41%	50.07%	8.52%
Grand Total	91.48%		8.52%

Further, it was found that among educational TV viewers, awareness of PM eVidya DTH TV channels varies significantly across geographical areas, gender and age groups. The area-wise analysis reveals a substantial awareness gap of 23.35% between rural and urban areas, with the rural population demonstrating notably higher awareness (54.35%) than the urban population (30%).

Gender-wise analysis indicates that females exhibit marginally higher awareness of PM eVidya DTH TV channels at 39.42% compared to males at 36.55%. Age-wise analysis among students demonstrates a clear trend of increasing awareness with age, with 22.47% for children aged 5–10 years, 41.55% for those

aged 10–15 years, and 54.90% for the 15–20 years age group, indicating that awareness of PM eVidya DTH TV channels is most prevalent among teenagers and young adults.

The data reveal diverse sources of awareness for PM eVidya DTH TV channels among students, parents and teachers. Among the various sources, newspaper advertisements and articles account for 13.02%, social media platforms for 32.70%, personal networks (teachers, parents, guardians and friends) for 38.41% and random TV channel discovery accounts for 15.87%, highlighting the crucial role of interpersonal communication and social media in disseminating information about educational initiatives.

Role of Educational TV Channels during COVID-19 Pandemic for Students

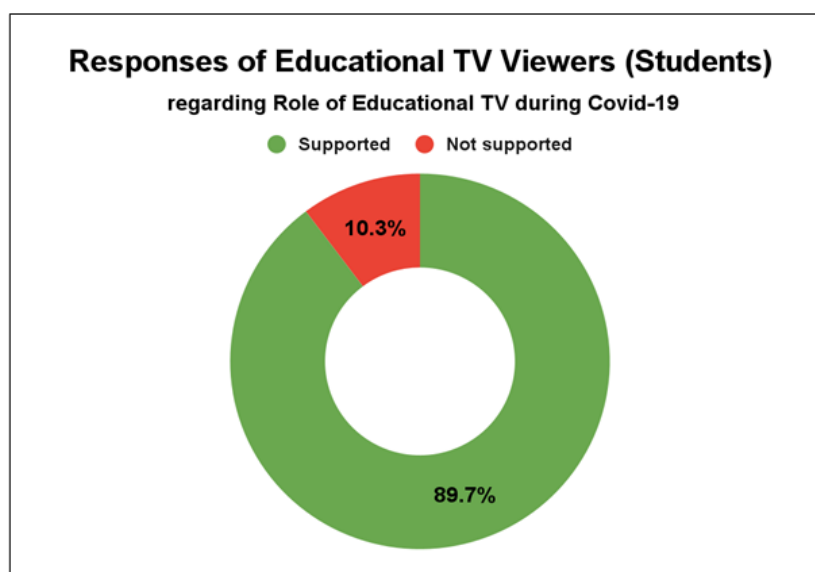


Figure 1(a): Responses of educational TV viewers (students) regarding the role of educational TV during the COVID-19 pandemic

The data reveal that among educational TV viewers, an overwhelming majority of students (89.7%) reported that programmes telecast on educational TV supported their

educational needs during COVID-19. In contrast, only 10.3% felt that educational TV did not meet their needs during that period.

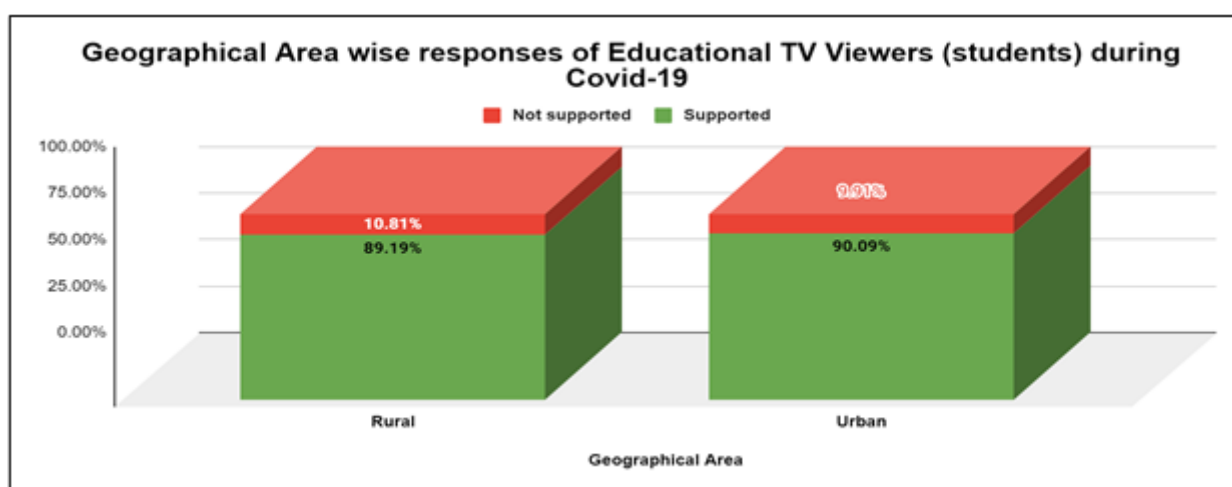


Figure 1(b): Area-wise responses of educational TV viewers (students) regarding the role of educational TV during the COVID-19 pandemic

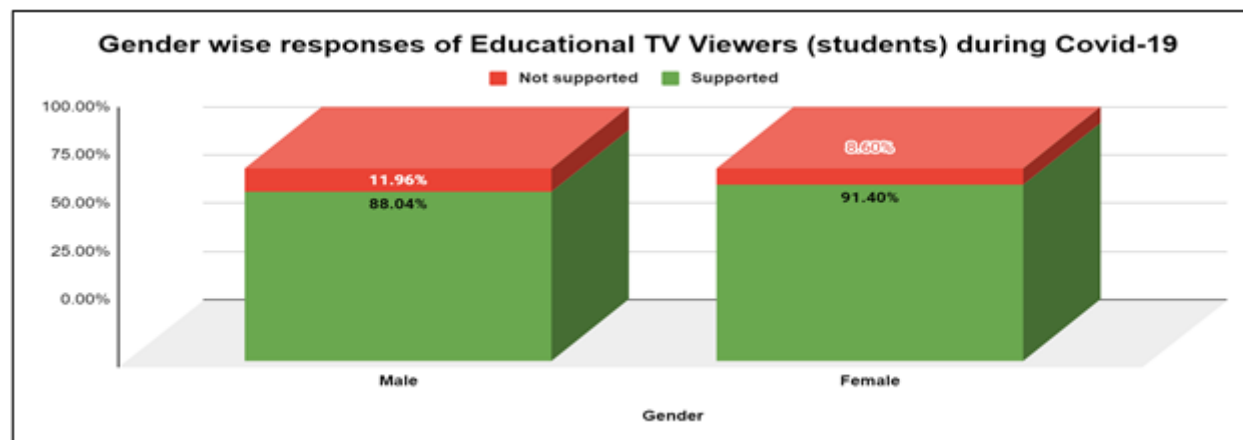


Figure 1(c): Gender-wise responses of educational TV viewers (students) regarding the role of educational TV during the COVID-19 pandemic

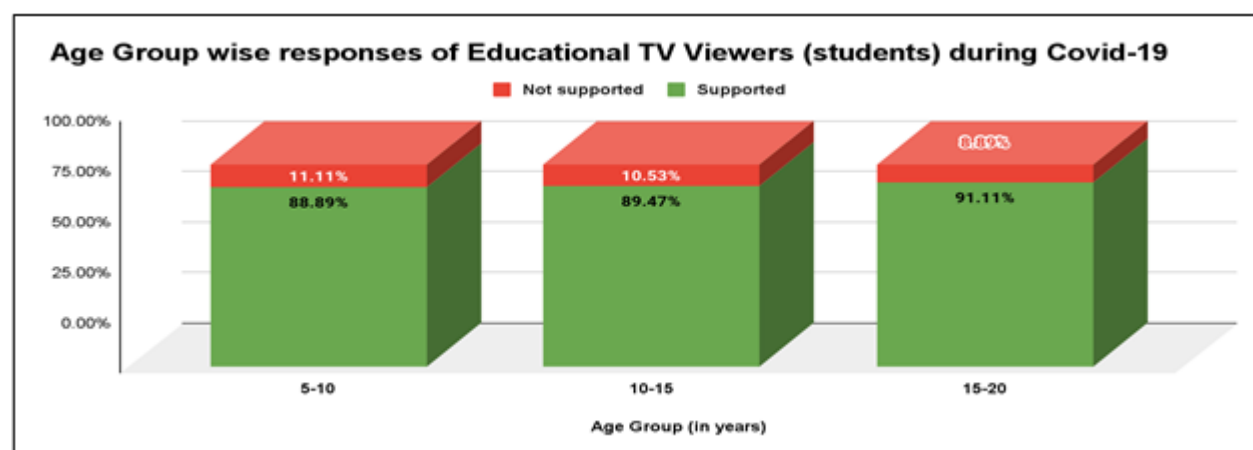


Figure 1(d): Age-wise responses of educational TV viewers (students) regarding the role of educational TV during the COVID-19 pandemic

Further, the data reveal that the during COVID-19 pandemic, a consistently high level of support for educational TV was observed among students across rural (89.19%) and urban (90.09%) areas. However, a small percentage of students in rural (10.81%) and urban (9.91%) areas indicated that their learning needs were not met by educational TV.

Similarly, a high level of support for educational TV was noted among male (88.04%) and female (91.4%) students, with a slight gender variation (3.36%). A consistently high level of support was also observed among all age groups, with the highest level

of support found among students aged 15–20 years (91.11%). Students aged 5–10 years (88.89%) and 10–15 years (89.47%) also reported that educational TV supported their learning needs, while nearly 10% students in each age group felt their learning needs were not met, highlighting areas for potential improvement to enhance its effectiveness across the entire age spectrum of students.

Overall, educational TV proved to be a valuable and effective resource for students' learning needs across diverse geographical areas, genders and age groups, especially during unprecedented circumstances like COVID-19.

Stakeholders' Perceptions towards the Quality and Effectiveness of Educational TV Programs

Teachers' Perceptions

The data reveal that among teachers using educational TV programmes, a significant majority (69.55%) believed that the e-Content shown was interesting. Additionally, 67.9% teachers agreed that the e-Content telecast on educational TV provided comprehensive knowledge. Most of the teachers (65.02%) found the e-Content beneficial for the teaching-learning process. A total of 61.73% teachers

agreed that e-Content reduced the need for tuition, while 25.10% disagreed. Regarding the pedagogical alignment of e-Content with classroom needs, 36.63% teachers agreed that it was well-aligned, 43.62% remained neutral and 19.75% disagreed. Varied responses were received regarding the achievement of learning outcomes. A total of 69.55% teachers agreed that e-Content supported their professional development. However, the relatively high percentage of neutral responses regarding pedagogical alignment and support for learning outcomes indicate a need for potential improvements in designing e-Content.

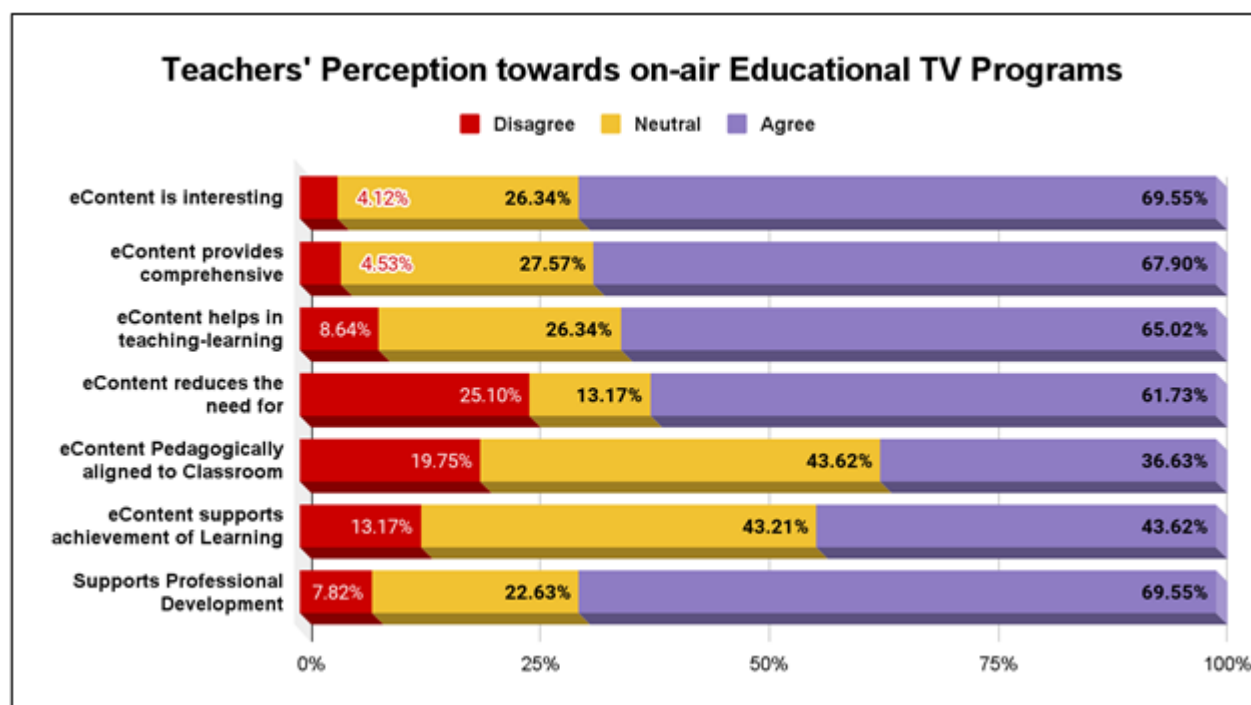


Figure 2(a): Teachers' perceptions towards the quality and effectiveness of on-air educational TV programmes

Students' Perceptions

The data reveal that among students who watched educational TV, a significant majority (67.73%) found the e-Content interesting, reflecting a high level of agreement with teachers' responses. Additionally, 68.44% students perceived that e-Content provided comprehensive knowledge, which closely aligns with the teachers' views. A notably

high percentage of students (77.66%) compared to teachers (65.06%) agreed that e-Content was beneficial for their learning. However, a significant divergence was observed regarding the reduction of tuition or coaching. While 61.73% teachers agreed that e-Content reduced the need for tuition or coaching, only 37.94% students shared this view. Notably, 36.17% students maintained a neutral stance on this issue.

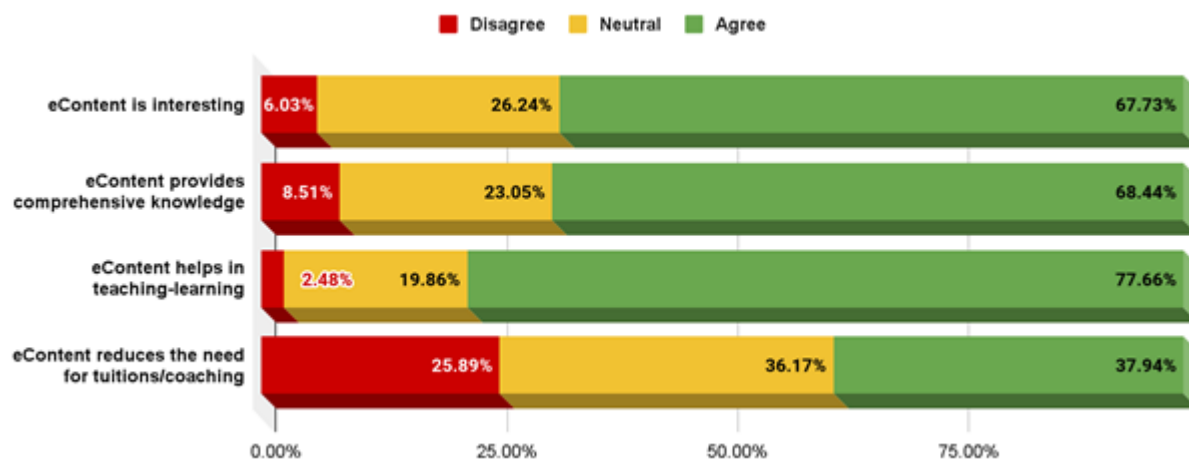


Figure 2(b): Students' perceptions towards the quality and effectiveness of on-air educational TV programmes

Parents' Perceptions

The data reveal that among parents whose children watched educational TV, a majority (75%) agreed that e-Content shown on educational TV programmes was interesting. Additionally, about 70% parents believed that it provided comprehensive knowledge. A high percentage of parents (73.34%) also agreed that e-Content also helped in the teaching-learning process. These findings align with the perceptions of teachers and students regarding interest, comprehensiveness, and support for

teaching and learning. Diverse opinions were reported regarding the reduction in the need for tuition or coaching, with 45.31% parents agreeing that e-Content reduced the need for additional tuition or coaching, 26.56% remaining neutral, and 28.13% disagreeing, reflecting the perceptions among students and teachers. The notably high neutral response from parents (44.53%) regarding the age-appropriateness of e-Content and its support for academic achievement suggests uncertainty in assessing how well these programmes align with their children's academic needs and age levels.

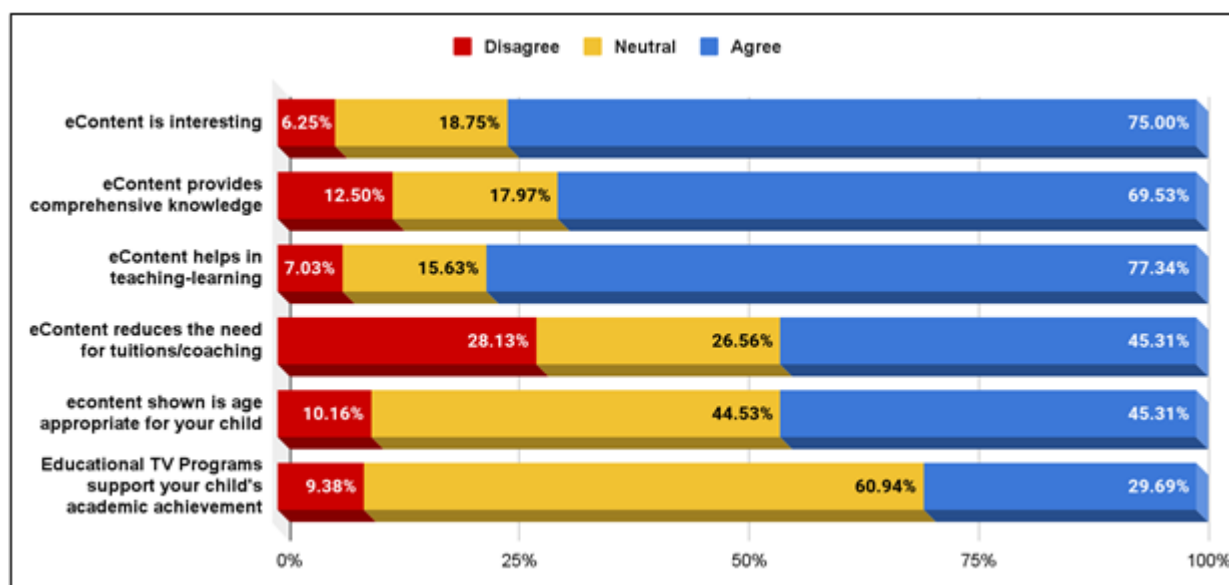


Figure 2(c): Parents' perceptions towards the quality and effectiveness of on-air educational TV programmes

eContent preferences of stakeholders

Data on preferred types of e-Content among students, parents and teachers reveal insightful patterns in their choices of educational content. General awareness content emerges as the most popular option across all three groups, reflecting a strong inclination to acquire knowledge beyond the curriculum. This is followed by concept-based content and textbook chapter-based content, indicating a preference for core concepts, alongside textbook material. Notably,

exemplar questions maintain consistent interest across all groups. Interestingly, while sports and games-related content generates significant interest, especially among students, it is comparatively less preferred by teachers and parents. Lectures, however, are the least preferred, particularly among teachers, possibly indicating a paradigm shift in teaching and learning approaches. Overall, this diverse range of preferences highlights the need for more interactive and engaging e-Content presented in various formats.

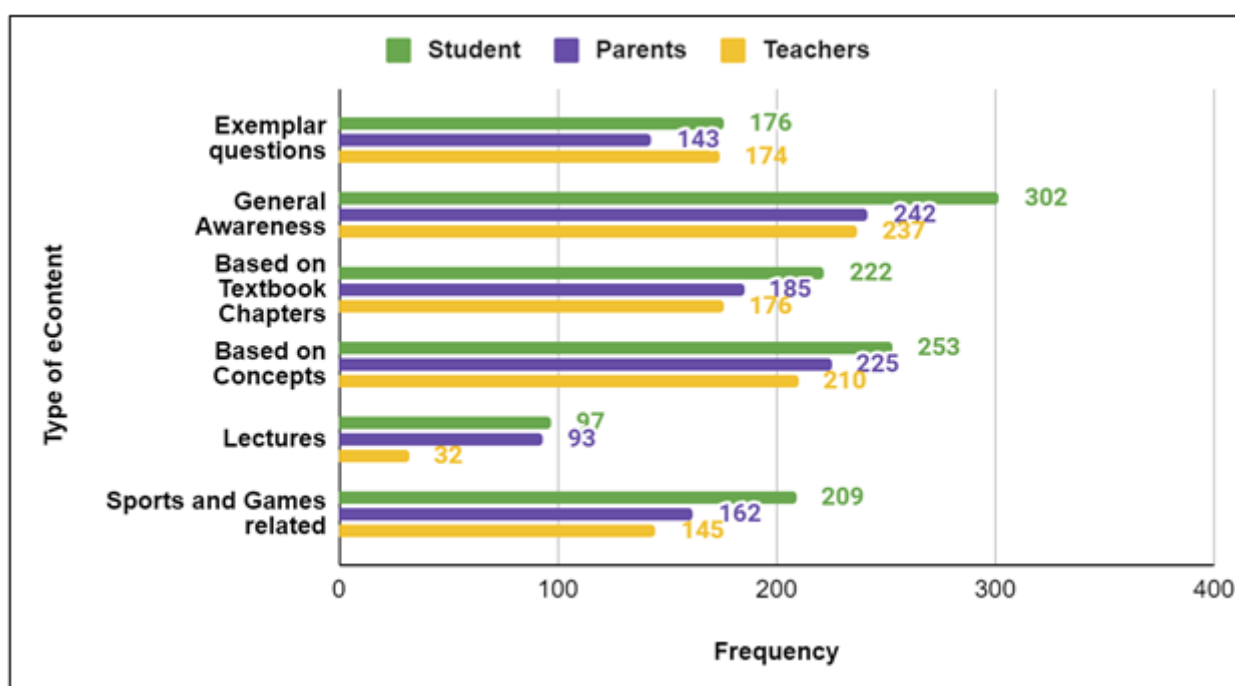


Figure 3: Preferred choices for content for educational TV programmes

Suggestions

Based on comprehensive data and analysis from previous discussions, it is recommended to implement targeted advocacy campaigns for educational TV to reach a wider population in both rural and urban areas, and enhance awareness among learners of all age groups. Providing multimodal access will further help bridge the digital divide and extend educational reach to even the remotest parts of the country. The content for educational TV programmes should be age-specific and pedagogically aligned, tailored

for diverse audiences with varying needs and preferences. Developing more engaging and interactive content will ensure a higher level of learner engagement and effectiveness.

Conclusion

This research underscores the significant potential of educational TV as a valuable tool in the Indian education system, especially during the unprecedented circumstances of the COVID-19 pandemic. The study confirms that educational TV plays a crucial role in bridging the digital divide and

bringing learning directly to the learners' doorsteps. It also identifies potential areas for improvement, particularly in raising awareness levels, ensuring pedagogical alignment of content and enhancing the perceived effectiveness of e-Content in reducing the need for additional tutoring.

The varying preferences for e-Content emphasizes the need for a diverse and tailored approach to content development and delivery. This study provides a foundation for informed decision-making and strategic planning by policymakers, educators and content developers in the evolving landscape of educational TV to enhance the effectiveness and reach of educational TV initiatives in India.

In this context, the PM eVidya initiative, with its 200 DTH TV channels, launched by DoSE&L, Ministry of Education, GoI, marks a significant step towards achieving the objectives outlined in NEP 2020. It ensures equitable access to quality education nationwide, transcending geographical barriers and promoting inclusivity—a core principle of NEP 2020.

The e-Content broadcast on these channels is meticulously curated to align with curriculum standards, thereby improving educational quality and supporting NEP 2020's mandate for enhanced learning outcomes. Its primary objectives include providing high-quality and engaging video content to learners in their mother tongues across multiple platforms and enabling them to overcome digital barriers. By embracing the principles of accessibility, quality and inclusion, initiatives like PM eVidya 200 DTH TV channels play a vital role in realising the vision of NEP 2020.

Acknowledgement

This research paper is based on dipstick survey conducted by CIET-NCERT for the PM eVidya 200 DTH TV channel project, funded by DoSEL, Ministry of Education, GoI. The authors express their gratitude for this support and acknowledge the valuable contributions of the experts who participated in the workshop to review the research tools. Their insights were instrumental in refining and validating the tools used for the survey in this study.

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Web Links

- <https://ciet.ncert.gov.in/dth>
- https://ciet.ncert.gov.in/storage/app/public/files/17/DTH/SOP_for_200_DTH_TV_Channels_for_School_Education.pdf
- https://ciet.ncert.gov.in/storage/app/public/files/17/DTH/Guidelines_eContents_Educational_Television.pdf

Social Audit of Samagra Shiksha: Experiences from the Field

Sharad Sinha*, Prasoon Kumar**

Abstract

The Samagra Shiksha scheme, launched by the Government of India in 2018 and later modified in line with the National Education Policy 2020 (NEP 2020), is an ambitious, integrated initiative covering the country's school education from pre-primary to Grade 12. To ensure its effective implementation and monitoring, the Government of India introduced guidelines for the social audit of Samagra Shiksha on 25 August 2022. The National Council of Educational Research and Training (NCERT) was entrusted with the task of capacity building for master trainers across States and Union Territories (UTs). Any initiative of this scale required signing a memorandum of understanding (MoU) with a third party, such as a social audit unit or an institute. Once the MoU was signed and the States and UTs informed NCERT, the training programme was conducted on the basis of modules developed and coordinated by the Department of Teacher Education, which were approved by the Ministry of Education (MoE), on the date and venue specified by the States and UTs. This paper presents narratives based on field experiences from training programmes conducted in 11 States and UTs. These narratives, supported by data and evidence, were analysed to draw meaningful inferences. The paper highlights key issues and challenges encountered in various States and UTs, including the signing of MoU, selection of master trainers, cultural sensitivity in training, resource management challenges, and difficulties in data collection and reporting. Additionally, it addresses important queries and concerns raised by the master trainers across various States and UTs. The paper also offers recommendations for addressing critical issues, such as finding a balance between standardisation and localisation, need of robust capacity building infrastructure and creation of self-sustainability models. Finally, it outlines the way forward, emphasising the need for individualised action plans by States and UTs to effectively address these challenges and ensure a transparent, democratic and equitable social audit process.

Keywords: Samagra Shiksha, National Education Policy 2020, Social Audit, Master Trainers

Introduction

As per the 42nd Amendment of the Indian Constitution (1976), education was placed in the Concurrent List, allowing both the Central and State/UT governments to legislate on the subject. To strengthen the country's educational ecosystem, the Central and State governments have continuously formulated policies, schemes and initiatives. Several centrally-sponsored schemes, funded jointly by the

Centre and States, are being implemented to enhance the quality of education in India.

One such centrally-sponsored scheme is Samagra Shiksha, an integrated initiative aimed at improving the quality of education in India. Launched in 2018, Samagra Shiksha merged three existing schemes—Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and Teacher Education

(TE). Covering preschool to Grade 12, Samagra Shiksha focuses on enhancing school effectiveness, ensuring equal opportunities for schooling and promoting equitable learning outcomes.

Additionally, in July 2020, the Ministry of Education (MoE), formerly the Ministry of Human Resource and Development (MHRD), launched the third National Education Policy. The National Education Policy 2020 (NEP 2020) envisions providing sustainable, equitable, democratic and high-quality education to all, transforming India into a global superpower. The Samagra Shiksha scheme was revised in alignment of NEP 2020, ensuring it adheres to its foundational pillars of access, equity, quality, affordability and accountability.

For the effective implementation of any centrally-sponsored scheme, monitoring and assessment are crucial to identify the challenges and bottlenecks. Traditionally, this was done through third-party inspections and assessment. However, such assessments and inspections often lead to fear and confusion among stakeholders and beneficiaries. Along with inspections, audits play a significant role in monitoring programmes. Generally, audits are associated with the financial audits of a particular scheme or programme. Financial audits relate to the disbursement of entitlements to beneficiaries, expenditure of allocated resources in a programme within a given period, issues related to budgeting, etc. Additionally, impact measurement studies are conducted, usually in evaluative and summative formats, meaning they are done at the end of the financial year, five-year period or a decade. However, these are not ongoing assessments, limiting their ability to provide regular feedback and timely solutions. Moreover, such studies do not always provide a

holistic understanding of the effective implementation of the programme, as they may overlook the perceptions and experiences of stakeholders.

To gauge the efficacy of any reform or initiative, it is imperative to take into cognizance the views of stakeholders. Thus, social audits, conducted in a participatory manner, allow stakeholders and beneficiaries to express their concerns regarding problems and suggestions throughout the course of the scheme's implementation. This ensures their active and equitable participation in the implementation of the programme, fostering a bottom-up approach that highlights challenges at the grass-roots level and provides time-bound and immediate solutions. Unlike traditional audits, social audits should be seen as fact-finding rather than fault-finding exercises.

Therefore, for effective implementation and monitoring of several initiatives of Samagra Shiksha, it was considered imperative to conduct a social audit of the programme. The Government of India launched the guidelines for the Social Audit of Samagra Shiksha on 25 August 2022. Existing literature reviews suggest that social audits serve as an effective tool for the smooth and transparent implementation of programmes.

History of Social Audit in India

Researchers suggest that social auditing enhances stakeholders' understanding and awareness of the programme. Karmakar (2017) points out that the word 'social' in 'social audit' refers to human beings, essentially stakeholders and society, who play a crucial role in the auditing process. During social audits, people become more informed about their rights and entitlements (Kumar

and Madheswaran, 2019). Tambe, et al. (2016) highlights that social audit provides a transparent picture of the programme's workability, i.e., what is working and what is not, while also addressing corruption and bolstering accountability in the services delivered by the government [Aakella and Kidambi (2007); Afridi (2008); Vij (2011); Sumarbin (2014); Aiyar and Mehta (2015); Tambe, et al. (2016); Koner (2017); and Mir and Sharma (2024)].

In Public Service Delivery (PDS) across South Asia, social audits have contributed to improved accessibility and accuracy of services, enhanced transparency and public trust, fostering greater inclusivity, increased accountability and bridging gaps between community and government officials or authorities (UNDP, 2017).

A 2018, study conducted by the Centre for Good Governance on social audits in Andhra Pradesh PDS revealed similar results. In 2019, the National Institute of Rural Development and Panchayati Raj (NIRDPR) conducted a study on the social audit of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), concluding that social audits resolved discrepancies in the allocation of funds, identified and corrected delays in wages, and reduced absenteeism among officials. In 2020, the International Institute for Environment and Development (IIED) analysed social audits in climate development programmes in Bangladesh, outlining that they enhanced monitoring, increased transparency in the distribution of resources, and strengthened community trust in governance by providing channels for feedback and improving climate-resilient initiatives.

A study conducted by Gopal and Singh (2022) reveals that social audits could improve transparency, accountability and

efficiency in the PM-POSHAN scheme. Similarly, Sinha (2022), in his paper, 'Expanding Social Audit to Development Programs beyond MGNREGA', described social auditing as an essential tool for enforcing social accountability. He pointed out that, given its success in raising people's awareness about MGNREGA, the Government of India has been focusing on the social audit of other development programmes.

Regular audits help establish early warning systems by uncovering issues like violations of rules, discrimination and poor working conditions, allowing timely intervention before minor issues escalate into major incidents. Audit findings may help devise better policies and procedures, as they often reveal opportunities for improving working conditions and community relations. Social audit recommendations provide a roadmap for bring about positive changes. The concept of social audit was introduced in India in 1979 by the Tata Group, through its subsidiary Tata Iron and Steel Company (TISCO). Following its success, social auditing was recommended for various public sector programmes and schemes, such as MGNREGA (2005), Mid-Day Meal Scheme (2014), National Food Security Act (2015), Juvenile Justice Act (2015), Rights of Persons with Disabilities Act (2016), Pradhan Mantri Awas Yojna—Grameen and National Social Assistance Programme (2019), among others.

Here is a brief timeline of the history of social audit in India. Since its inception, social audits have been integrated into multiple government programmes and schemes, strengthening accountability, transparency and efficiency in public service delivery across India.

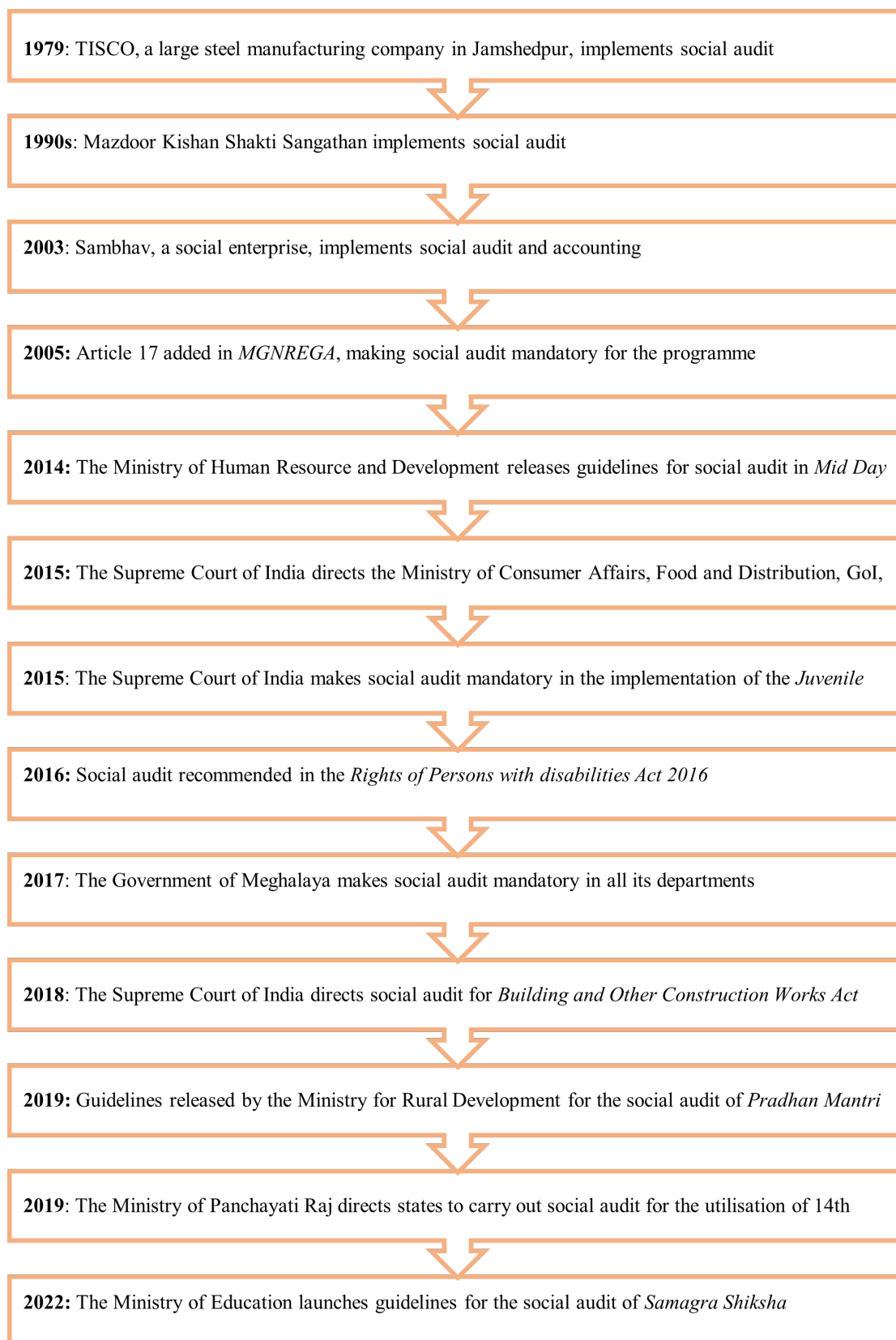


Fig 1: A timeline showing the implementation of social audit in government programmes in India

General Guidelines for Social Audit¹¹

Some important points that should be considered for conducting the social audit of a scheme or programme are discussed below.

1. The objectives and scope of the social audit of a particular scheme or programme should be clearly defined. This should be followed by identifying the key aspects to be audited, including the extent of implementation, fund utilisation, beneficiary satisfaction, and the upgradation or maintenance of infrastructure. It must be pre-determined whether the audit will cover all components of the scheme or focus on specific areas (e.g., educational outcomes in Samagra Shiksha). Additionally, while auditing a scheme or programme, it is important to examine and understand the existing legal and policy framework.
2. Clear and well-defined guidelines for the audit should be established, taking into account the existing frameworks and guidelines for social audits for other schemes and programmes. These guidelines should be specific to the scheme in question to ensure adherence to the rules governing the social audit of that particular scheme or programme.
3. Social audit teams must be well-prepared with knowledge of the scheme, maintenance and upkeep of financial records, and auditing techniques. Since independent and neutral auditors play a crucial role in conducting social audits, the process may involve training civil society members or local volunteers. In some cases, external evaluators or neutral agencies can be engaged for additional verification and validation of findings.
4. Mobilising the community and raising awareness among beneficiaries, civil society organisations and local governments for active and wholehearted participation is key to the successful social audit of a scheme or programme. It remains a participatory exercise only when the views, opinions and suggestions of community members are valued and considered for the effective implementation of the scheme. Beneficiaries and communities involved in this process must have a clear understanding of the scheme's administrative mechanisms, their rights and how the social audit empowers them to hold authorities accountable. Public access to documents related to the scheme, such as sanction orders, utilisation certificates, physical and financial targets and achievements, and State/UT-wise beneficiary lists, must be made available to every citizen. These documents should be presented in a format that is easily understandable for the general public, including those without technical expertise. If required, provisions under the Right to Information (RTI) Act and the Centralised Public Grievance Redress and Monitoring System (CPGRAMS) may be utilised.
5. Essential tools like questionnaires, interviews and focus group discussions should be designed and tested in advance before being administered to collect qualitative and quantitative data from beneficiaries. Ensuring the use of appropriate tools and methods for analysing the collected data is crucial for obtaining reliable and meaningful outcomes. The follow-up and reporting format should be well-defined and clearly reflect how the findings are mapped to the tools.
6. The process of social audit requires continuous support from government institutions and authorities at the local, state and central levels to ensure access to information at every stage.
7. A detailed plan for arranging venues, transportation and necessary materials for public hearings and meetings should be prepared well in advance. Adequate financial resources

should be allocated for training, data collection and conducting public discussions.

8. A well-structured social audit can enhance the effectiveness of centrally-sponsored schemes by ensuring that they meet their objectives and benefit the intended populations.

Social Audit of Samagra Shiksha

For conducting the social audit of Samagra Shiksha, the documents related to the scheme, along with NEP 2020, have been thoroughly reviewed and understood. Accordingly, it was proposed that the social audit of Samagra Shiksha be conducted in a comprehensive manner, covering all initiatives outlined in the scheme. These include universal access and retention, vocational education, gender and equity, inclusive education, guidance and counselling, digital initiatives, and strengthening of teacher education and training. Additionally, the audit should address issues related to infrastructure, teachers, students, safety and security in schools, finance, and administration from Grade 1 to 12. However, early childhood care education do not fall within the purview of social audit at this stage.

Social audit is a relatively new concept in the field of education. Therefore, raising awareness among the stakeholders of Samagra Shiksha was crucial. It was also essential for stakeholders to understand the mandate and rationale behind this social audit. To achieve this, a team comprising key resource persons and social auditors at various levels was proposed.

At the district level, master trainers were designated; at the block or cluster level, Cluster Social Auditors (CSA) were assigned; and at the school level, Social Audit Facilitation Team (SAFT) were proposed to conduct the social audit. These master trainers, CSA and SAFT

members were required to have a deep understanding of the dynamic educational ecosystem and the significance of social audits in the educational landscape. Therefore, it was imperative to ensure that a sufficient number of individuals thoroughly understood the execution of entire process.

For this purpose, NCERT initiated the capacity building of selected master trainers across States and UTs in India. This was undertaken immediately after the signing of the MoU with the state governments, following which arrangements were made for the training of master trainers. Subsequently, these master trainers were responsible for training CSAs and SAFT members at the dates and venues decided and notified by their respective state authorities. The master trainers, CSAs and SAFT members formed a team of independent auditors, whose primary responsibility was to ensure neutrality and transparency of the social auditing process.

To facilitate the training process, NCERT developed three comprehensive modules based on the scheme guidelines. These were as follows.

1. Initiatives for school education under Samagra Shiksha
2. Social audit of Samagra Shiksha
3. Tools and reporting format

Module 1 highlights and discusses the key initiatives for school education under Samagra Shiksha, including universal access and retention, early childhood care and education, vocational education, gender and equity, inclusive education, guidance and counselling, digital initiatives, strengthening teacher education and training, monitoring, etc. It also provides details on the financial allocations for various components of the scheme.

Module 2 explains the details and mechanisms of the Samagra Shiksha social audit process to ensure that stakeholders

and beneficiaries understand the mechanism of social audit and actively participate in making it a democratic, equitable, accountable and transparent exercise.

Module 3 comprises six tools for data collection, covering are both qualitative and quantitative aspects, viz., institutional questionnaire (Tool 1), interview schedule for head teacher or principal (Tool 2), Focus Group Discussion (FGD) schedule for teachers (Tool 3), FGD schedule for parents (Tool 4), FGD schedule for community members (Tool 5) and FGD schedule for students (Tool 6). Additionally, it includes four reporting formats—School Report Format (ScRF), Cluster or Block Report Format (C/BRF), District Report Format (DRF) and State Report Format (SRF). The items in these reporting formats were mapped to the tools to ensure accurate meaningful reporting of the collected data.

These tools and reporting formats were first piloted in schools of Odisha during September 2023. After piloting, the tools and reporting formats were revised based on the feedback received.

For the social audit of Samagra Shiksha, states were required to seek support from several institutions and bodies, such as the State Council of Educational Research and Training (SCERT), State Institutes of Rural Development (SIRD), District Institutes of Education and Training (DIETs), etc. Additionally, cooperation was sought from government officials, such as state project officer, district education officer, district project officer, block education officer, etc.

Accordingly, the States and UTs were advised to prepare an ‘annual calendar’ for conducting each cycle of the social audit. This calendar would include details, such as the list and timeline for the training of CSAs and SAFT members; the venue of training; the list of schools

where social audit would be conducted; the tentative timeline for data collection from schools by SAFT; the timeline for SAFT’s submission of ScRF; details about date, time and venue for public hearings; the timeline for the submission of B/CRF by CSAs; etc.

The States and UTs were also advised to meticulously plan financial resource allocations and ensure sufficient funding for the smooth execution of the entire exercise.

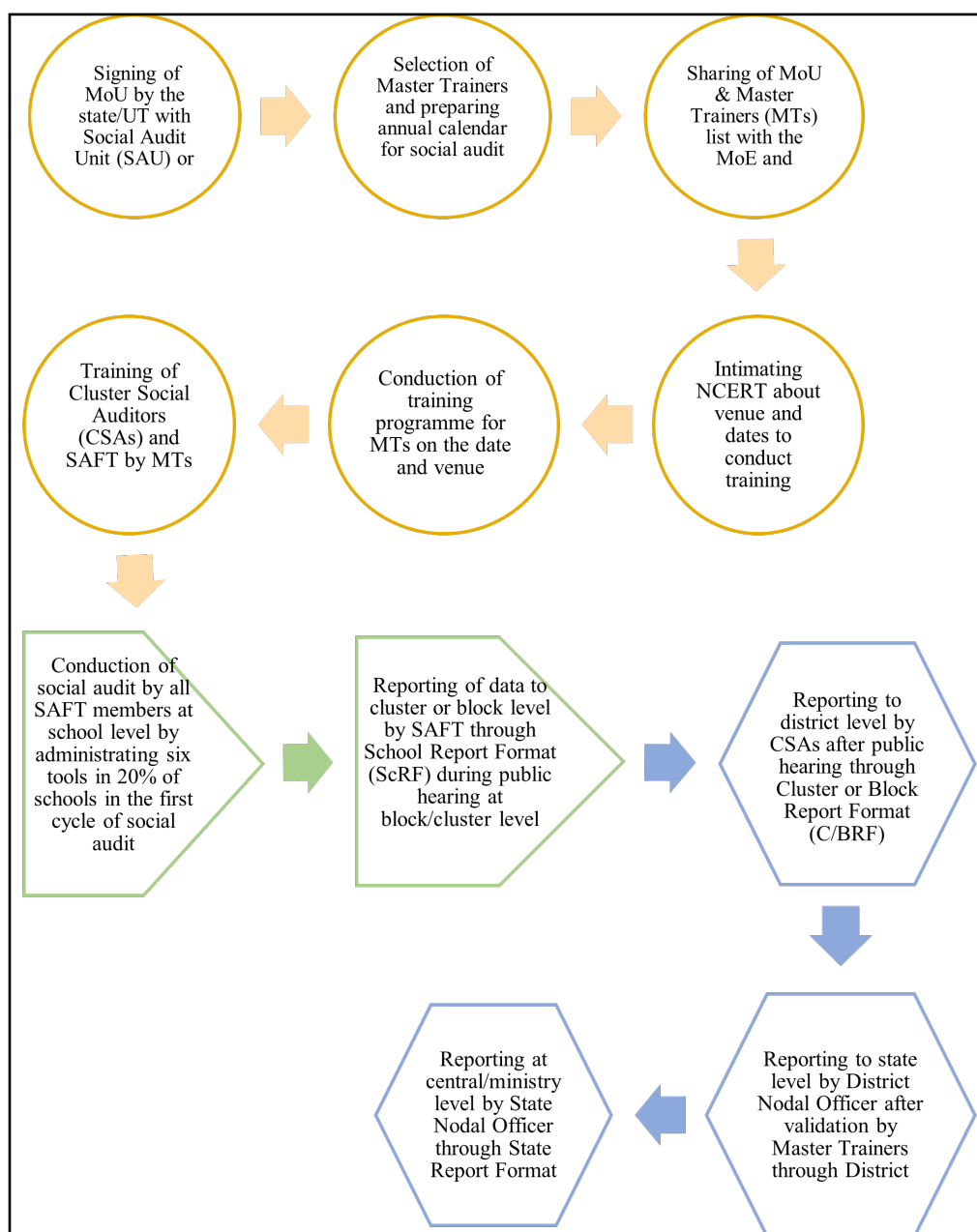
As this is an action-oriented exercise, its purpose is not limited to identifying problems but also includes providing solutions in a time-bound manner. Public hearings provide a platform for beneficiaries and authorities to come together, discuss issues and arrive at solutions in a democratic, equitable and transparent manner. It is expected that grievances raised during the audit are addressed promptly, with their resolution being documented through reporting formats by concerned authorities and team of social auditors.

The Process of Social Audit of Samagra Shiksha

The process of social audit, as outlined in the execution guidelines by the MoE, has been depicted stepwise in the following flowchart, covering all stages from the signing of the MoU between the State with the Social Audit Unit (SAU)/ institution to the reporting of data at the central or ministry level.

In the flowchart, the circular boxes (orange) denote the pre-audit phase, pentagonal boxes (green) represent the social audit phase, and hexagonal boxes (blue) indicate the post-audit phase. The pre-audit phase includes all steps from the signing of the MoU to the training of CSAs and SAFT team by master trainers. The audit phase involves data collection at the school level by the SAFT team and

conducting public hearings at the block or cluster level. The post-audit phase is the reporting phase of data at block/cluster, district and state level.



- Pre-audit phase: Signing of MoU to train master trainers, CSAs and SAFT members
- ◡ Social-audit phase: Conducting social audit in schools (data collection phase)
- ◡ Post-audit phase: Reporting data through various reporting formats

Figure 2: The Process of social audit of Samagra Shiksha

Social Audit of Samagra Shiksha: Capacity Building Experiences

After the MoE revised and finalised the guidelines for the social audit of Samagra Shiksha in September 2023, the Department of Teacher Education, NCERT, conducted training programmes for master trainers in 11 States and UTs, namely Odisha, Jharkhand, Gujarat, Goa, Andaman and Nicobar Islands, Karnataka, Meghalaya, Uttar Pradesh, Rajasthan, Mizoram and Punjab between October 2023 and October 2024. Odisha was the first to undergo training in October 2023, while Punjab was the most recent, completing its training in October 2024.

Due to the diversity in demographics and geography across States and UTs,

various challenges arose in conducting the training programmes. During the sessions, participants raised several diverse questions and concerns. Two critical issues—the signing of the MoU and the selection of master trainers—are discussed in this paper. Additionally, the key narratives that emerged from training programmes in each State/UT are thoroughly examined.

Signing of the MoU

According to the MoE's approved guidelines, the training programme for social audits can commence only after the state and SAU/institute sign an MoU with an appropriate body to execute the social audit exercise. The list of States and UTs that have signed the MoU so far is as follows. This list highlights the diverse institutions involved in this process across different states.

Table 1: States/UTs and MoU Signing Agency

Name of the State/UT	MoU Signing Agency
Odisha	Odisha Society for Social Audit Accountability and Transparency
Jharkhand	Jharkhand State Livelihoods Promotion Society
Gujarat	Mahatma Gandhi Labour Institute
Goa	Ponda Educational Society College of Arts and Science
Andaman and Nicobar Islands	Department of Rural Development, PRIs and Urban Local Bodies and Department of Tribal Welfare
Karnataka	The Social Audit Directorate of Karnataka
Meghalaya	Meghalaya Society for Social Audit and Transparency
Uttar Pradesh	Lucknow University, DDU Gorakhpur University, SVS University, Integral University, MMM University of Technology
Rajasthan	MoU not required*
Mizoram	Department of Education, Mizoram Central University
Punjab	Department of Education, Panjab University

The process of signing the MoU is time-consuming due to the need for budgetary allocations, identification of master trainers, and other procedural requirements, which impact the overall timeline. Once the MoU is signed, the states inform the MoE and NCERT, after which the dates for the training are finalised.

In some states and UTs, such as Uttarakhand, Bihar, Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Puducherry, Himachal Pradesh, Maharashtra, Delhi and Telangana, the signing of the MoU is pending for various reasons. These include difficulties in identifying a suitable agency for signing the MoU, delays in framing the MoU for social

audit, transfer of concerned officials and delays in key appointments. Additionally, elections in Jammu & Kashmir and Haryana have contributed to further delays.

Some states, such as West Bengal and Kerala, expressed reluctance towards the training of master trainers by a national-level central body and preferred to engage a local body of their choice.

During the financial year 2023–24, which marked the first cycle of the social audit, training programmes were conducted only in seven states—Odisha, Jharkhand, Gujarat, Goa, Andaman and Nicobar Islands, Karnataka and Meghalaya—due to constraints on the part of state governments. In the financial year 2024–25, four states—Uttar Pradesh, Rajasthan, Mizoram and Punjab—completed training by October 2024.

To facilitate training and the social audit process, the MoE has introduced a Google tracker form, which has been shared with the States and UTs for updating the status of their MoUs. Additionally, periodic rigorous assessments of the MoU status, along with sensitisation programmes or meetings, would help States and UTs prioritise training programmes and the execution of the social audit process.

Selection of Master Trainers

The guidelines for the social audit of Samagra Shiksha grant autonomy to States and UTs in selecting master trainers. So, diverse batches of master trainers were selected across different States and UTs. Table 2 provides details on the number of master trainers in each State or UTs, along with their affiliations and backgrounds.

Table 2: States/UTs and the Number of Master Trainers along with Their Affiliations

Name of the States/UTs	No. of Master Trainers	Affiliation
Odisha	60	Members of the Odisha Society for Social Audit Accountability and Transparency
Jharkhand	47	Members of the Jharkhand State Livelihoods Promotion Society
Gujarat	74	Scholars and faculty members of the Mahatma Gandhi Labour Institute
Goa	33	Scholars and faculty members of the Ponda Educational Society College of Arts and Science
Andaman and Nicobar Islands	33	Members of the Department of Rural Development, PRIs, Urban Local Bodies and the Department of Tribal Welfare
Karnataka	39	Members of the Social Audit Directorate of Karnataka
Meghalaya	71	Members of the Meghalaya Society for Social Audit and Transparency
Uttar Pradesh	150	Scholars and faculty members of Lucknow University; DDU Gorakhpur University; SVS University; Integral University; MMM University of Technology
Rajasthan	63	Members of the Social Audit Unit of Rajasthan
Mizoram	25	Scholars and faculty members from the Department of Education, Mizoram Central University
Punjab	37	Scholars and faculty members from the Department of Education, Panjab University

The transformative journey of training on the social audit of Samagra Shiksha began as the initiative moved across India's diverse landscapes, with training materials reviewed one last time. In August 2023, the recently launched social audit guidelines for Samagra Shiksha were securely in place. This initiative embarked on a significant journey across 10 states and UTs, each with its own unique educational ecosystem.

The First Training

The first training session was conducted in Odisha in November 2023, where the monsoon had left the landscape lush and vibrant. Odisha, a state with a coastline extending about 480 km covering six coastal districts, has 48,558 government schools spread across 314 blocks. The primary task was to provide first-hand training to master trainers from diverse subject areas, including education. This required a thorough understanding of the revised framework of Samagra Shiksha and its key provisions, which were to be examined during the social audit of schools. Given that the social audit exercise was to cover all schools under Samagra Shiksha in the state, the first phase aimed to audit 10,000 schools by the end of the financial year on 31 March 2024.

Odisha had signed an MoU with the Odisha Society for Social Audit Accountability and Transparency (OSSAT) to execute the social audit. The training took place at the auditorium of Krushi Bhawan, Bhubaneswar, with 60 master trainers from 30 districts. These trainers were associated with two organisations—OSSAT and OSEPA (Odisha School Education Programme Authority)—and had prior experience of conducting social audits of other schemes, such as MGNREGA, which are more quantitative in nature.

The crucial question raised by a senior principal, "How do we ensure objectivity in social audits?" became the central theme of discussion, not only in Odisha but in all subsequent training sessions in other states

too. This question underscored the need for a clear and well-structured orientation to ensure that master trainers fully understood the process. The challenge lay in maintaining a delicate balance between community participation and professional assessment.

The participants felt that massive data would be generated, suggesting that an online reporting system would enhance transparency and objectivity. Additionally, translating the training modules into the local language was considered beneficial for the further training of CSAs and SAFT members.

These 60 master trainers—equipped with training modules in English and Odia, an action plan and support from State authorities—felt empowered to take on this massive exercise. They were prepared to conduct training in their respective districts and effectively implement the social audit exercise across Odisha.

The Second Training

The second training session for Jharkhand was conducted in January 2024. Known as the mineral state of India, Jharkhand has 13,568 schools across 260 blocks. In the first cycle of social audit, covering the financial year 2023–24, a total of 1,064 schools were expected to undergo the process.

A total of 47 master trainers from 24 districts participated in the training. The trainers were members of the Jharkhand State Livelihoods Promotion Society (JSLPS) and had prior experience of conducting social audits for the PM-POSHAN scheme.

A key concern raised by the participants was whether negative responses to questions in the audit tools could lead to fund cuts. Additionally, they expressed apprehension that variations in the implementation of the programme might lead to data manipulation to present an artificially high standard of execution. These concerns stemmed from their past experiences auditing the PM-POSHAN scheme. Another major issue was whether providing audit tools in advance

to head teachers and principals might create opportunities for data manipulation. The participants also sought clarification on the formation of audit teams and other procedural details of the exercise.

The Third Training

The third training was conducted in Gujarat in February 2024. The state has 33,568 schools spread across 250 blocks. A total of 7,078 schools were selected for social audit in the first phase, i.e., for the financial year 2023–24. Seventy-four participants, including master trainers from 33 districts and other authorities from the Mahatma Gandhi Labour Institute (MGLI), participated in the training.

Gujarat had made extensive preparations for the exercise, including developing modules in Gujarati. Posters were distributed during parent-teacher meetings to sensitise and encourage the cooperation of parents and community members in the social audit process.

A detailed action plan was prepared, outlining the social audit calendar, a list and a timeline of training CSAs and SAFT members, the number and type of schools to undergo auditing in the current financial year, as well as the steps and timeline for data collection and reporting. This action plan was designed to help the team stay on schedule, track activities and ensure the smooth execution of the social audit process.

The Fourth Training

The fourth training was conducted in Goa in February 2024. The state has 797 schools spread across 12 blocks. In the first phase of the social audit, i.e., for the 2023–24 financial year, a total of 160 schools were selected. Thirty-three master trainers, along with CSAs and SAFT members from two districts, participated in the training. While the action plan was easy to develop, there were concerns about organising public hearings.

The Fifth Training

The fifth training was organised in the Andaman and Nicobar Islands in March 2024. The union territory's 30 inhabited islands have 306 schools spread across 60 blocks. In the first phase of the social audit exercise, i.e., for the financial year 2023–24, 160 schools were selected. Thirty-three participants, including master trainers, CSAs and SAFT members from three districts, attended the training at Port Blair.

During the training, a master trainer highlighted the challenges of travelling between islands, as they are located far apart. She said that ferry rides, the only mode of transport, are available only until 3.00 pm. This concern underscored a significant role of geographical attributes in determining the execution of a social audit. Besides, it has further implications in terms of time and increased expenditure for data collection.

The Sixth Training

The sixth training session was conducted in Karnataka in April 2024. Of the 46,750 schools spread across 237 blocks, 9,796 were selected for the social audit in the first phase, i.e., for the 2024–25 financial year.

Thirty-nine master trainers from 31 districts participated in the training. With prior experience in conducting social audits for MGNREGA, the master trainers were quick to raise questions regarding public hearing. They inquired whether the public hearing in the social audit of Samagra Shiksha is same as the Gram Sabha in MGNREGA and how the data would be collated after the public hearing. Similar to Odisha, master trainers in Karnataka also were keen to explore the possibility of online reporting of data.

The Seventh Training

The hilly state of Meghalaya was the seventh stop in the training itinerary in May 2024. It has 3,540 schools spread across 46 blocks. In the first phase of social audit, i.e., for the

financial year 2024–25, a total of 708 schools were proposed for assessment.

Seventy-one master trainers from 12 districts, including CSAs and SAFT members, participated in the training held in Shillong. They showed a keen interest in Lok Vidya and sought a detailed explanation of the tools.

The Eighth Training

The eighth training session was conducted in Uttar Pradesh, one of India's most populous states in terms of both area and population, in August 2024. The state presents a vast educational landscape, with approximately 50 million school-going children (in the age group of 5–18 years)—a number exceeding the total population of Spain. To put this into perspective, the number of school-going children in Uttar Pradesh alone is comparable to the entire population of South Korea (51 million) and greater than all of Australia (26 million).

The scale of educational infrastructure required to serve this population is immense, with the state needing more schools than many continents have in total. Providing quality education to such a vast number of young learners is equivalent to managing the entire school systems of medium-sized nations simultaneously.

Uttar Pradesh has a total of 133,601 schools spread across 886 blocks. In the first cycle of the social audit, i.e., for the financial year 2024–25, a total of 26,720 schools were proposed for assessment. A total of 150 master trainers from 75 districts were trained in two batches at the State Institute of Rural Development, Lucknow.

The master trainers came from diverse disciplinary backgrounds and were unfamiliar with many educational terminologies. During the training, key discussions focussed on school counsellors, and what their roles are. the functions of a school management committee, What is meant by inclusion, and terms like CWSN (Children with Special Needs), etc.

The compact geography and high population density of Uttar Pradesh posed a unique challenge—the sheer density of schools and the complexity of urban education systems raised concerns about community engagement. In areas where parents work long hours, taking time off to participate on the social audit process was difficult and seen as a significant hurdle.

Another concern among master trainers was the challenge of convincing village elders about the importance of social audits. A common apprehension was that community members might perceive them as outsiders coming to evaluate and judge them.

The Ninth Training

The ninth training was conducted in Rajasthan, one of the largest states in India in terms of area, in August 2024. The state has 70,961 schools spread across 302 blocks. In the first cycle of the social audit, i.e., for the financial year 2024–25, 14,192 schools were proposed for assessment, accounting for 20% of the total schools.

The training took place in the auditorium of Dr Radha Krishnan Shiksha Sankul, Jaipur. Sixty-three master trainers from 50 districts attended the programme. These trainers had prior experience in conducting social audits under MGNREGA. The challenges in the state were as vast as its desert landscape. Due to the geographical spread of schools, some audit team members had to travel extensively, covering long distances to reach remote schools.

A local teacher remarked, “Madam ji, the distance between schools is measured not in kilometres but in the number of sand dunes one must cross.” This statement underlined how challenges in data collection vary across States and UTs, necessitating different levels of preparation and own flexible action plans tailored to local conditions.

The Tenth Training

Mizoram was the tenth state to receive training in August 2024. Reaching the destination

at the Mizoram Central University required navigating through heavy rains, crossing landslide-affected areas and dealing with traffic congestion.

The state has 2,580 schools spread across 13 districts and 26 blocks. A total of 841 schools were proposed for social audit in the first cycle, i.e., financial year 2024–25. Twenty-five scholars and faculty members of the Department of Education participated as master trainers.

During the programme, the participants raised concerns about the state's uneven population density. Some districts have significantly lower populations, with as few as 300 people in certain remote and isolated hill areas. This poses a challenge in forming SAFT at the school level. Additionally, it is tough for SAFT members to commute across districts, given the challenging geography, frequent landslides and incessant rains.

An official emphasised a critical issue, stating, "Policies or programmes usually fail in regions like ours, as they are designed keeping the mainstream regions in mind. Since one size does not fit all, it is essential to bring attention to the issues that states at the periphery like ours face to make social audit a democratic, equitable, transparent and inclusive process. Some changes are needed according to their requirements, keeping the basic structure of the social auditing process intact. In consonance with the guidelines for social audit, certain elements in the tools need to be customised and translated into Mizo language."

The Eleventh Training

The next state in the training programme was Punjab, marking the eleventh session. The state has 19,128 schools spread across 146 blocks. In the first cycle of the social audit, i.e., for the financial year 2024–25, 3,825 schools were proposed for assessment, accounting for 20% of the total schools. Twenty-seven master trainers were invited to participate in the training.

Along with the usual discussions on various terms used in the documents and

the classification of implementation steps, specific concerns were raised during the sessions. Key questions included how to ensure the implementation of safety and security guidelines by schools and how to validate the information in the institutional questionnaires filled by head teachers and principals.

A journey through 11 destinations has provided a wealth of experiences, revealing distinct narratives from training sessions across different States and UTs. Each State and UT presents unique challenges and concerns related to the social audit of the Samagra Shiksha scheme.

At the same time, multiple resources are available to address these challenges. One key takeaway is the need for flexible, individualised action plans to ensure the smooth execution of the social audit process. Several methodological insights derived from the narrative analysis of training experiences are outlined as follows.

Methodological Insights

Several key patterns emerged from these experiences, which may be useful in conducting the social audit exercise in other states and in the second phase for the States and UTs where it has already been conducted.

Cultural Sensitivity in Training

- Each state required a unique approach to training delivery. Master trainers should not hesitate should adopt flexible strategies while preparing action plan
- Local language and contexts played a crucial role in effectiveness and should be taken into account.

Resource Management Challenges

- Variable allocation of funds across states: Difficult terrains need more funds to facilitate the entire exercise.
- Different interpretations of CSAs and SAFT formation guidelines: Master trainers had varying understandings of

these guidelines during training, leading to information loss in the cascade model.

Data Collection Innovations

- Translating tools into regional languages before administering them
- Integrating traditional and digital methods as and when needed
- Considering geographical diversities while preparing action plans

The Transformation

As the journey progressed, a remarkable transformation was witnessed in the way master trainers approached their roles. What initially started as a government directive evolved into a movement for educational accountability. The social audit was no longer merely a monitoring tool. It became a bridge connecting communities and schools to enhance quality, identify loopholes and devise local solutions wherever possible.

Critical Analysis and Recommendations

The experiences highlighted several systemic challenges that need to be addressed, including the following.

Standardisation versus Localization

- Striking a balance between uniform standards and local needs requires deeper understanding and involvement.
- Developing flexible yet consistent assessment tools is essential, considering the diverse educational landscape, varying school environments and regional aspirations.
- Enhancing proficiency in data handling is crucial due to the large volume of data generated

Capacity-Building Infrastructure

- Establishing a continuous support system is necessary, with training scaled

up and repeated for teams in the next cycle too.

- Developing local resource persons is essential to provide guidance in addressing challenges related to training, data collection, submission and report preparation.
- Continuous mentoring and support must be ensured.

Sustainability Measures

- Creating self-sustaining training models
- Building long-term community engagement mechanisms
- Promoting community awareness and participation

The Way Forward: Individualised Action Plans

To address multiple challenges arising from the rich diversity of our country's educational landscape during the execution of social audit process, each State and UT has been advised to develop an individualised action plan. Several states, including Odisha, Gujarat and Goa, have formulated detailed action plans, consisting of a social audit calendar, a list of CSAs and SAFT, a training timeline for CSAs and SAFT members, the number and type of schools undergoing social audit in the current financial year, and the steps and timeline for data collection and reporting. These action plans would facilitate the States and UTs to keep a track of the time, activities and tasks to ensure the smooth execution of social audits. Best practices, such as awareness initiatives, sensitisation efforts, time-based task calendars and the prior translation of tools into local languages, can be time-saving and beneficial for others.

Conclusion

Research studies suggest that social audits have been effective tools for the smooth implementation of various programmes or schemes, as they help identify and understand the grass-roots problems,

as well as provide solutions [Kumar and Madheswaran (2019); Tambe, et al. (2016); Gopal and Singh (2021), and Sinha (2022)]. Social audits conducted in schools across Columbia, Guatemala, Uganda, Kenya and Tanzania have played a crucial role in addressing discrepancies, improving school facilities, reducing teacher absenteeism, balancing student-teacher ratios, fostering parent and community engagement in school management, and empowering communities to meet their educational needs, ultimately enhancing the quality of educational services (UNICEF, 2016). Social audits serve as valuable tools for assessing an organisation's social impact and ethical practices, ensuring accountability and transparency, demonstrating commitment to social responsibility and providing documented evidence of social and ethical performance in various schemes.

To enhance the implementation and awareness of Samagra Shiksha, the Government of India launched a social audit of the scheme in 2021. To ensure an equitable, democratic, transparent and accountable social audit process, it is important that

stakeholders understand the nuances of Samagra Shiksha, social audits and the broader education system. To achieve this, it was imperative to form a robust team of master trainers and social auditors across State and UTs. As part of this initiative, NCERT developed three modules based on which capacity-building programmes for master trainers were organised in 11 States and UTs from October 2023 to October 2024. Experiences across India's educational landscape have demonstrated that the successful implementation of social audits requires more than just guidelines and training sessions. A deep understanding of local contexts, cultural sensitivities, community dynamics and resource management is essential. Additionally, audits should be scheduled to avoid coinciding with festivals, harvest or examination periods. To address these challenges and facilitate the smooth execution of social audits, states and union territories must prepare individualised action plans. Training programmes have shown that when these elements align, social audits can become powerful tools for educational transformation.

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Understanding Dynamics of School Discipline: Examining Classroom Practices and Teachers' Perspectives in a Primary School

Isha Joshi

Abstract

The research paper aims to shed light on the dynamics of school discipline practices within the context of a primary school in Delhi, exploring how the disciplinary ideal unfolds, assimilates, and becomes deeply ingrained in teachers' beliefs and classroom practices. This qualitative study employed participant observation, informal interactions and interviews to explore differing perspectives, experiences, and contexts within which disciplinary practices are applied. The research addresses key questions, including the types of disciplinary methods commonly employed in primary schools, teachers' perceptions of the effectiveness of these methods, and the factors influencing their disciplinary decisions. Participant observations address the disciplinary aspects of the activities and social hierarchies between students, teachers, and administrators, which form the basis of normative power. Interview results indicate that teachers view discipline as the 'soul' of any formal educational institution, and consider it to be a vital part of the school experience. The categories of order, rules, obedience, respect and service emerge as having the utmost priority among teachers' perceptions of discipline.

Keywords: Discipline, control, order, ethnography, primary education, educational ideals

Introduction

This article presents insights from ethnographic fieldwork conducted at a primary school in North East Delhi. The paper explores pedagogic and co-curricular activities to unravel how the idea of 'school discipline' unfolds, assimilates, and becomes ingrained in a teacher's beliefs and classroom practices. Attempt is made to delve into teachers' beliefs regarding school discipline and introduces the lens of subjectivity, highlighting the interplay between personal convictions and institutional values and how specific educational ideals of discipline and order are fostered in students through schooling. The paper argues that schools function and operate with guiding values that may not be overtly visible and aims to

explore the subtle but influential forces that shape individuals' beliefs within a community and contribute to the construction of socially acceptable norms.

Conceptual Framework

"Discipline at its most basic level, simply means the submission to rules or some kind of order." (Winch & Gingell, 2008. p.58). Winch & Gingell (2008) argue that in the extensive literature on discipline in schools, the complexity of the concept 'discipline' and its connections are often neglected with inadequate attention paid to "the legitimate limits of school and teacher authority or the aims of education" (p.58). Discipline as a concept is thus used to indicate 'order' and 'regularity' and often interchangeably

used with 'control' (Clark, 1998, p. 289). In this paper, the terms discipline, order, and regularity are used to explore, situate and document the mechanisms of control perceived as discipline. According to Durkheim (1973), "discipline in society is to be seen as the father, commanding us, and prompting us to do our duty" (p. xii) and external discipline is a socialisation tool to instil moral authority and respect for social norms. "Discipline in effect regularizes conduct. It implies repetitive behavior under determinate conditions" (Durkheim, 1973, p. 31). Although Durkheim doubted punishment's effectiveness as a deterrent, he accepted it to uphold disciplinary authority in order to maintain social norms and order. It thus becomes the responsibility of educators to establish for students the moral authority of social norms through their disciplinary authority, and to provide the necessary external reinforcement to keep them in place.

However, traditional authoritarian disciplinary measures are argued to undermine a school's socialization objective by alienating students (Dewey, 2012). While Dewey (2012) is sceptical of discipline imposed by teachers, citing that an external discipline is merely a tool for control; he argues that discipline is critical to the growth of the individual and social democracy. Students' active participation in the curriculum and completion of assignments foster self-discipline; teacher-imposed discipline undermines this process by stifling initiative. Thus, teachers should help students choose and engage with their surroundings rather than imposing beliefs or habits on them. Both perspectives advocate for the development of internal discipline with internalised respect for the authority of rules.

Issues of student control through everyday school life are critical themes for sociological research in education. Illich (1971) argues that modern schools have an ulterior motive of creating a homogenous population that thinks alike fits into a predefined mould and

functions as per the institution's requirement. This study draws upon the work of Foucault (1975), *Discipline and Punish: The Birth of the Prison*, where he posits that the evolution from public executions in monarchic power to imprisonment in a democratic society reflects the transition of power structures in society, giving rise to modern disciplinary practices. With industries, hospitals, and schools modelled after the contemporary jail, Foucault contends that this new kind of punishment becomes the framework for governing a whole society wherein surveillance, normalising judgments, and taking examinations became the control mechanisms. This form of control focused its target on the body of an individual. He explains that this new system of power is based on making "docile bodies" that may be subjected, used, transformed and improved (p. 136) rather than exerting brute force over them. Foucault (1975) shows how disciplinary practices create 'docile bodies' of prisoners, soldiers, and school children who were subjected to disciplinary power so that they become more useful and easier to control. Discipline, in principle, is how power is exercised on bodies to make them docile and more productive to increase the efficiency and utility of the people. He then examines how discipline is encouraged by institutions (specifically, here, schools) and becomes the norm in modern societies as an instrument of change. The observed classroom interactions are also explained by Foucault's assertions on surveillance and punishment in the educational system.

Studies on schools and school culture also reflect the diverse ways in which discipline is carried out in classrooms and school premises. Iyer (2013, p. 163), in her ethnographic study of disciplinary and pedagogic practices in a primary class, found that the chief concern in the school was disciplining children, and teachers strived to create docile and obedient bodies through disciplining, thereby reforming children. Caddell (2005) in her ethnographic study of a school in Nepal, observed that schools establish inequalities

and differences between “educated and uneducated, developed and less developed, and mark divisions between ordered, disciplined, modern, and ‘national’ from those considered ‘backward’, undisciplined, traditional, or confined to the local” (p. 78). Discipline thus plays a chief role in shaping the ‘modern’ identities of children, teachers, and the broader community. By acting as a disciplinary institution and normalising certain interactions, schools mould children’s minds toward more desirable behaviour and bring a sense of prestige.

Chun’s (2005) ethnographic study in a Taiwanese middle school reveals the features of power centralisation and authoritativeness of the Taiwanese educational system. The study explored how schools’ institutional regime, through disciplinary practices, becomes a significant socialisation agent resulting in constant regulation of thought, a prominent feature of everyday life at school. Chun, 2005, p. 60) notes that, “the wearing of uniforms, the application of uniform codes of social conduct and obeisance to political authority all make school life a microcosm of the militarised and politicised polity already being played out in society at large”. Sarangapani (2003), in her paper ‘Childhood and Schooling in an Indian Village’, describes how teachers in schools were regarded as gurus (spiritual knowers), deepening the unquestioning institutional authority of the teacher over the students. Teachers were regarded as the sole bearer of knowledge and thus held the ultimate power over the development of a certain ideology among students. The submission to authority, i.e., the teacher, and accepting them as the sole bearer of knowledge contributes to the conception of student identity. She highlights that these beliefs and perceptions about self and others come from a deep-rooted framework of “pedagogic and cultural traditions” (p. 415).

Sarangapani’s (2003) observations align with Froerer (2007) and Sarkar (1996), who argue that education is used to serve the chief purpose of nation-building and imparting the

idea of a ‘good citizen’ (moral citizenship) with political correctness and can think, act, and feel in a certain rehearsed kind. Sadachar, or moral improvement/education, becomes one of the ways through which schools attempt to achieve their aim of creating well-behaved, dutiful citizens with nationalistic values. This discipline is primarily physical in the early years, shifting towards moral and ideological as students progress to higher grades. Froerer (2007, p.1037) observed, “the prarthna (prayer) is where the school’s disciplinary regime is most prominently displayed with strict attention to bodily comportment and students’ demonstration of physical discipline”.

Tan (2011) reiterates and amplifies the disciplinary culture observed in papers by Froerer, Sarkar and Chun. Tan’s (2011) study in an Islamic boarding school in Ngruki, Central Java, focused on ‘conditions’ that lead to, sustain, and perpetuate a disciplinary tradition in schooling. The school in Tan’s (2011) study mirrors a uniform, monolithic religious ideology that is also consistently and deliberately imposed in their daily school activities. Discipline is enforced where students are deliberately kept away from newspapers, radio, and television and regulate their meetings with their parents only once every two weeks. Themes of authority and discipline accompany the discourses of nationalism, religion, surveillance and control in the context of everyday practices and life at school.

Method

The data for this paper was collected during October 2023- January 2024 in Blossom Public School (BPS) (name changed to maintain anonymity), which is located in Sewa Vihar (name changed to maintain anonymity) area of North-East Delhi. The school was established in 1990 as a co-educational, English medium, private, unaided (recognised by MCD) school. This institution primarily serves pre-primary (Nursery and Kindergarten) and primary

grade (grades I-V) students and is situated in a double-story building with a small courtyard within the premises.

Four hundred and twenty students were enrolled in the school during the period of research. BPS follows the mother-teacher concept for all grades, from nursery to class 5. There are about 20 teachers presently employed in the school. The school has one person in-charge of overseeing day-to-day administration work and one receptionist. The in-charge and receptionist also fill in as substitute teachers when any class teacher is on leave. The school's mission is rooted in making education accessible to families with limited financial means, and as shared by the School Principal, caters to children from low socio-economic backgrounds. The tuition fee for Nursery and KG was INR 800 and around INR 1000 for primary grades. The school does not charge any development fees or miscellaneous charges from parents.

Data was collected through: 1) unstructured classroom observations-taught classes and during free periods, as well as observations in the school premises, lunch breaks and school assemblies; 2) informal conversations with teachers and students, as well as semi-structured interviews with 10 teachers, the school-in-charge and the Principal. A semi-structured interview schedule was prepared to understand teachers' perceptions of disciplinary practices. Participant observation, unstructured conversations, and interviews explored teachers', students' and administration's perspectives on experiences and situations in the school context where disciplinary actions are often used. The interviews, in particular, explored issues, such as the kinds of discipline techniques frequently used in elementary schools, the efficacy of these techniques as perceived by teachers, and the variables affecting their judgments regarding discipline. Semi-structured interviews, of an average duration of 45 minutes each, were audio recorded with participants' permission. These were transcribed fully. Thematic analysis approach was adopted to

analyse the interview transcripts and field notes of classroom / school observations were used to triangulate and contextualise the interview data. The names of the school, teachers and students were changed to maintain the anonymity of the participants.

Findings and Discussion

Findings are presented under two overarching themes: Children as subjects of discipline and School as a 'System' of Discipline. The first theme explores how discipline is enacted upon children through various school practices, including the regulation of student speech and thought (maintaining silence), control over students' body (disciplined body), and the negotiated nature of discipline (disciplining with consensus). The second theme focuses on the role of the teacher, representing the school system, in shaping student behaviour (teachers as agents for 'good' behaviour) and the structures of observation and control (culture of surveillance). These themes highlight the ways in which discipline is conceptualised and enacted in everyday life and practices of the school, shaping students' conduct, interactions and consciousness.

Children as subjects of discipline

Maintaining silence- of thoughts and words

During the school observations, it appeared that the explicitly stated purpose of education was to create 'humans' out of the children, to discipline them, to 'regularise' them and to make them mindful of set norms and rules. It could be argued that this was probably the case because children were not seen as 'persons' but rather as 'moulds' that could be shaped the way adults want them to be, with schools' responsibility to manufacture them. A 'good' classroom was seen as akin to a quiet classroom. The teachers, on various occasions, were noted to ask the children to maintain silence in the classroom, in the corridors, while having lunch, and even at

play. Ms Neena of class 1 would not start teaching unless the children put their fingers on their lips (a practice where one puts their index finger on their lips as a sign to remain silent). It is a daily ritual that she sticks to in the classroom, followed by instructions for the children to abide by. The children are discouraged from speaking out of turn or asking 'unnecessary' questions. Comments like, "Don't speak when two people are speaking, it is not a good habit" resounded many times, not only in this particular class but in others as well.

The teachers in BPS were assigned duties in the morning, during lunch break, and in the afternoon, during dispersal time to enforce discipline and maintain silence and order in the corridors. Talking loudly in the presence of teachers was not deemed appropriate. The ones who were found talking were dealt with seriously. Teachers often complained, "There are three teachers/ elders standing before you, and yet you are talking so much. Show some respect". Respect for elders was equated with being silent in front of them, not only during casual talks but even when the children had to ask questions or comment on certain events. Unwanted questions and undesired comments were discouraged. "The children should talk only when prompted by the teacher", Ms Bhawana of class 5 commented, responding to a boy asking questions regarding the timetable. Nothing in the classroom should happen without the teacher's permission. During an EVS period in class 5, a girl, Priyam, asked the teacher, Ms Tanya, "Why do cows only move their tail to ward off flies? Why don't they move their body?". The teacher was miffed and irritatingly instructed her not to ask questions unrelated to the lesson. She dismissed her queries by explaining, "Good children do not ask too many questions. These are not good manners."

Conversations among children were strictly restricted to recess or during school dispersal (when students are released from school and allowed to go home). Even during these periods, the children were 'advised' to

keep their voices low so as not to disturb the school's discipline. Talking out of turn or talking loudly was a major factor contributing to indiscipline in school. While sitting at the reception after the dispersal of students, Ms Prachi (the computer teacher) and Ms Neha were talking about a rather 'difficult' class (class 4) that they have to deal with. Ms Prachi was complaining about the noise that the children of said class make in the absence of their class teacher, "Their voices could be heard outside the classroom". Ms Neha seemed to resonate with the experiences and lamented that she was exhausted from dealing with such brash students. "Yours is the most indisciplined class in the school", she told the children. The teacher acted as a warden who oversaw whether all the rules were followed. This instance resonates with the observation that "Indian teachers show an unusual and exaggerated concern for maintaining order, perceived in a relatively narrow and confined sense among their students" (Kumar, 1991, c.f. Iyer, 2013, p. 168). While in class, children were expected to seek permission from the teachers to speak or ask questions. They were directed to raise their hands if they had to say something to the teacher or their peers. Asking questions and reasoning were considered threats to the culture of discipline created in the school.

A disciplined body

"To a great extent, signs of disobedience are mapped on the body and how the body is conducted, groomed, or made to appear" (Deka, 2014, p. 76).

Children in BPS were seen as certain physical entities that needed to be controlled and trained. "It is difficult to deal with young children as their attention span is short. It is a task to make them sit at a place for an extended period" commented Ms Babita, class teacher for class 1. She claimed that young children are restless and have lots of energy; thus, disciplining them at this age is a much harder task but an important one as they might become unruly in later stages if they are not adequately taught how

to control their bodies now. The teachers believed that children and their behaviour should be regulated from a young age so that they grow up to be disciplined adults. The teachers regulated body postures and behaviour, repeatedly reminding them to stand while talking to the teacher, raise their hands before talking, and control their classroom movements (not moving around the class without permission). The arguments posed align with the ethnographic study undertaken by Iyer (2013), where she argued that through disciplining, teachers were striving to create docile and obedient bodies.

The classroom/school was seen as a space different from their homes. "You are not in your home; this is a classroom sit properly" was regularly floated around the school. Almost in a ritual-like manner, the students were regularly reminded in the morning to sit with their legs down, back straight and elbows on the table. The school adhered to disciplinary practices as akin to following rituals. Basil Bernstein (1982) argued that rituals in school embody and transmit the school's value system. In enacting such rituals, individual students were likely to experience a sense of belonging to the group. 'They served a crucial socialising function in that acting out such rituals socialised the children into the school's ethos' (Iyer, 2013). Bernstein (1982) argued that socialisation through rituals is profound because it operates at a tacit, *primaeval* level. Whenever any disruption was observed, the teacher would loudly call, 'How do we sit?', and the children would assume the desired position quickly, almost like a reflex.

The school strictly observed the practice of students standing when talking to the teachers. While taking rounds to ensure classes were running smoothly, Ms Latika spotted a boy from class 5, engrossed in talks with his friend and scolded him for talking during an ongoing lesson. The boy started explaining, but she cut him midway, instructed him to stand, and then answer her. "You should stand while talking to

the teachers, she explained. Meanwhile, Ms Bhawana glared at two girls and shook her head, signifying them to stop their discussions. The girls quickly sat straight and started copying classwork from the board. Persistent stares from the teacher, a slap on the desk, and loud calling of someone's name were some of the cues the teacher would employ to maintain discipline in the classroom. It was as though the children had internalised these 'disciplinary cues' and acted what was expected out of them through these cues.

The observations of disciplinary practices in the school are similar to Iyer's (2013) analysis of discipline in her study, where she states that 'central to the teachers' constructions of children was the idea of the 'child as a physical being'. These constructions were revealed in the rituals, which regulated children's bodies. 'In the teachers' construction, the child's mental existence was largely absent or was reduced to insignificance' (Iyer, 2013, p. 173). In BPS, it was observed that in the case of disciplinary transgressions, the children were strictly reprimanded or, in extreme situations, were also physically punished. A slap on the face or a twist of the ears as punishment was common in the school. Although handing out corporal punishments was not allowed in the school, the management did not seriously follow up on this rule for the teacher. The in-charge herself believed that doling out mild physical punishments should be acceptable as it helps to keep the children in check, and they take the teacher seriously. A teacher once complained about a boy in her class talking back to her and commented that "children who misbehave with the teacher and question the authority should be punished physically; otherwise, it may become a habit to disrespect teachers if not taken seriously. Now they will complain, but it will only help them in the future". The teachers believed that disciplinary practices that are carried out in the school benefit the students as they grow. They become more "organised, orderly and proper". Deka

(2014), in her study, also commented that “the authorities act as the ‘custodians of the body’, which is strongly associated with the notion of modesty and docility” (p. 77). Cheruvalath and Tripathi (2015, p.130) study of secondary school teachers’ notion of corporal punishment in India similarly observed, “corporal punishment by teachers is justified by the assumption that teachers have good intentions”. At BPS, the school’s major objective of corporal punishment was also articulated to correct or stop the child from wrongdoing, which they sought to achieve by creating docile and obedient bodies.

Disciplining with consensus

The school not only seeks to decide how the children of ‘their’ institution would behave but also establishes how one should dress and appear in the school. Crisp and ironed school uniforms, trimmed nails, no nail paint (for girls), well-groomed hair (without any stylish haircut, for boys), polished shoes, and clean appearance were how the children were expected to show up at the school. The class teachers would organise a thorough inspection of the mentioned aspects every day in the classroom, and every Wednesday and Saturday, the inspection would happen in the morning assembly before dispersing to their classes. Defaulters were asked to stand aside, and appropriate punishment was decided.

The school ascribes a representative image to the children. They want ‘their’ children to behave, look, dress, and talk in a certain way as they represent the school in society. The teachers also have to follow the same standards of discipline as children. In a staff meeting, the Principal, Ms Sudha, reprimanded two teachers for their rude behaviour towards the parents and asked them to think before they act because they and the children are the ‘face’ of the school. Discipline is thus also an instrument for the institution to build an image in the minds of society. Being seen as a strict disciplinary institution is important because the parents

will take the school seriously. Data collected from the interview with the teachers indicated that the parents view schools as a medium of upward mobility, both cultural and financial and want the school to instil certain values and discipline to help them achieve said mobility. In light of such aspirations, schools embody the role of ‘manufacturing centres’ whose primary objective is to create disciplined students that ‘look and behave educated’.

The teachers were expected to wear salwar kameez regularly and sarees on special occasions, Parent Teacher Meeting (PTM) days or at any school function. The Principal strictly regulated this and would check if all the female staff wore chunni with the salwar kameez. The teachers had no qualms about wearing Indian attire, although sometimes they wished they could one day wear Western clothes. Ms Latika, at the reception, was discussing this with a fellow teacher who was observed complaining about wearing suits even on days when students were absent (only children participating in the annual function had to come). Ms Latika explained that they have to wear salwar kameez in front of the children on regular working days as a teacher in jeans does not look appropriate in front of the parents when they come to pick up the children. She said, “If teachers wear such clothes in school, what impression would it make on the children and parents?”. Other teachers nodded their heads and seemed to agree with the statement. The consensus was thus gained for enforcing any rule with the teachers and students alike. Teachers were also not allowed phones in the classroom and had to submit them at the reception till dispersal. When asked, the teachers explained that “phones disrupt the class. Thus, Principal Ma’am has not allowed us to keep phones with us”. The teachers were defending the practices themselves and fully consented with the reasons.

A monitor was appointed in the classroom with the children’s consensus who would enforce discipline in the absence of the teachers and be her ‘eyes and ears’. The children, as well

as the teachers, were consensual beings in this 'disciplinary apparatus' (Foucault, 1975), where they accepted the authority of the school and acceded to the order of the school. A boy, Rohan, in class 5 was quoted saying in an examination, "Sit straight; otherwise, ma'am will see you, and then you know what will happen. You will be sent out of the classroom". The children saw punishment as a consequence of acting out or creating disruptions as a natural reaction, which can be borne out of the ritual-like enforcement of disciplinary rules.

Punishments were normalised to the extent that the children could foresee the kind of consequence their actions could have. Students were not allowed to leave the classroom without teacher supervision, but when they had to go out, they were expected to carry a 'class pass' with them, signifying that they had the teacher's permission to be out of class. The class pass was a representation of teachers' authorisation and approval. This consensus is gained for disciplining individuals and creating docile bodies by normalising judgment. Foucault (1975) claims, "at the heart of all disciplinary systems functions a small penal mechanism" (p. 177). Transgressions involving one's use of time, activities, behaviour, speech, body, sexuality, and other areas are subject to 'micro-penalties'. The ideal setting for the disciplinary apparatus is one in which there are frequent micro punishments. The person subjected to these micro-penalties must believe that everything is punishable and that doing anything at all may result in social humiliation, mockery, deprivation, or a reduction in one's status.

Apple (2019) points out that consensus in society is valued, and any conflict between the various institutions in society is not pronounced as conflict is antithetical to the smooth functioning of society. Conflict in many institutions is not celebrated; the hidden curriculum reinforces the negative view of conflict and sees it as undesirable. The children saw punishment as a consequence of acting out or creating disruptions as a

natural reaction, which can be borne out of the ritual-like enforcement of disciplinary rules. Consensus for the disciplinary practices was gained through a moral obligation of obeying one's elders or someone above them in the positional hierarchy and giving teachers the utmost respect as gurus. Prayers in morning assemblies, stories in the moral education subject, values taught at the end of every chapter in Hindi and English, and various classroom practices like not speaking before the teachers and standing while talking to teachers aimed to generate an intrinsic value of respect and obedience in the minds of children. The prayer called 'thoda dhayn laga, guruvar daude daude aayenge' (If you concentrate a little, the Guru will come running to you), which students sang in the morning assembly, was in reverence of the teacher, "for they show us the path towards enlightenment" (the message of the prayer). Sarangapani (2003) in her paper also notes that teachers in schools were regarded as gurus (spiritual knowers), deepening the unquestioning institutional authority of the teacher over the students, where teachers were regarded as the sole bearer of knowledge and thus hold ultimate power over them. Students' and teachers' sense of identity concerning their traditional and everyday identities and the realization of both controlling and epistemic functions normalises their authority. It refers back to the identity of a teacher as a guru (a spiritual knower), as an adult, and a non-institutional identity as a parent. All these joint representations that a teacher bears, pose an absolute and unquestioning authority over the child. "They deepen the institutional authority of the teacher to a taken-for-granted, subconscious level of the psyche" (Sarangapani, 2003, p. 408), which is influential in the construction of an ideal student. A teacher's identity as a guru was significant in carrying out the process of discipline and punishment to correct undesirable behaviour.

The children were expected to internalise these values of respect and obedience.

"Ideally, subjects like moral education should encourage children to internalise values of respect and obedience, but we have to use such means to motivate them and sustain the order in school", said the Principal when asked about instruments they employ to ascertain discipline. Clark (1998) argues that teachers are supposed to manipulate extrinsic rewards and punishment to maintain their position of authority. "It is usual to reinforce this quest for power by soliciting back-up from colleagues, from parents who, as the instructing agents, are expected to give support" (Clark, 1998, p. 291). While intrinsic motivation is preferred in pupils, the children were motivated to stay disciplined through tools like prizes, results, certificates, appreciation in the assembly, making student leaders or class monitors, and encouraging competition.

School as a 'System' of Discipline

Harnessing discipline: teachers as agents for 'good' behaviour

Schools are seen as the agents of socialisation for students. Schools teach children more than reading, writing, computational skills, and studying specific subjects. When asked about the school's role in imparting discipline, Ms Babita remarked, "The school gives them an environment to learn 'good' values. Even if it is with the help of scolding, fear of punishment, or embarrassment, the child would at least follow the instructions and learn something". The arguments around this have hinted towards the fact that schools are seen as the agents of socialisation for students. The school in charge, Ms Shivani, asserted that "the daily activities carried out in the school, the timetable, the management, the actions that we do, our clothing and dressing, way of responding to everyday school situations all teach children order and discipline". Schools are seen as 'social sites' that aim more than just prescribed goals and objectives that are extrinsic but also provide some intrinsic knowledge that is not a part

of the formal curriculum but is hidden and works parallel to the formal curriculum through school objectives, values, and beliefs projected and transmitted in the day-to-day school experience.

During the interview, the Principal described the school as a 'system'. A system that the children and the teachers alike should follow. 'Following the system' is a pertinent characteristic of a 'good student' and 'good teacher'. Parsons (1959) argues that school acts as an agent of secondary socialisation: "It is in school that children learn not just the particularistic values of their own family but also the universalistic values of society. From the functional point of view, school class can be treated as an agency of socialisation" (p. 298). Thus, schools act as an agency through which individual personalities are 'trained' to perform adult roles adequately. "Schools are communities with rules, expectations, and customs, all of which reflect schools' underlying values" (Mullis and Fincher, 1996, p. 243). Schooling is then arguably seen as a system of order, rules, and time, which is believed to be inherent to its nature. The teachers see themselves as guides and mentors to the children. Ms Aabha remarked that "the teachers should be friendly but firm so the children do not take them lightly. Teachers are there in the classroom to correct the children's behaviour and model appropriate actions. It is okay if the teacher becomes somewhat strict and punishes someone for that purpose". Teachers view themselves as agents of maintaining discipline and order in the classroom. It echoes Clark's (1998) assertion that "educational order consists in part in submission (by teacher and child alike) to the demands of the internal values of practices" (p. 295). Participation from all community members fosters a supportive learning environment. It also enhances a sense of community and cohesiveness amongst the members. It is a way through which individual students will likely experience a sense of belonging to the school community. It serves as an important socialising function.

Discipline as a value is also characterised as an aspect of good education. “Just because a child can read, write, and comes first in class does not mean that he/she is educated. If they do not respect elders, our education does not have meaning”, remarked Ms Neha. Ms Tanya and Ms Aabha also supported this statement and commented that “respect for elders, obedience, and following rules laid down by the school are symbols of quality education”. Good behaviour with everyone, not arguing with elders, not intervening when adults are talking, and sitting quietly even in the teacher’s absence are some values a disciplined student must have. “A child with good manners is the topper for me”. While reflecting on her imagination of ‘good education’, the Principal described it as one that enables children to be systematic and ordered in their lives. “They should know the difference between right and wrong. It should teach them the value of time and the importance of doing things orderly”. She also extends this notion of punctuality and respect for time to the teachers: “good education can only happen in the presence of good teachers. If teachers are not disciplined, how can they teach children its importance?” Discipline within teachers and students is also seen as a value that they should possess for the school to run smoothly and to maintain its authority.

Culture of surveillance

Teachers in the school were kept under surveillance and the supervision of the in charge and management. Although there were no cameras on the school premises and classrooms, the school in charge, Ms Shivani and Ms Latika, took regular rounds of the classes to check for any disruptions and disorderliness. When talking to Ms Shivani about her role in the school, she explained that she keeps teachers in check, manages them, assigns them duties, maintains discipline, and ‘checks’ if they are doing their duties properly: “Sometimes I have to be strict with them (the teachers) when they do not heed the instructions. But what

can I do? It is part of the job”. After being checked by their class teachers, students’ notebooks were re-checked by Ms Shivani and Ms Latika to ‘catch’ any mistake on the part of the teacher. When discussing my role as a participant in the school, the Principal expected me to adopt a supervisory role for the teachers, wanting me to observe and provide her with regular reports of the teachers:

“Teachers should be teaching in the school. Children look up to the teachers. If the teachers are indisciplined, what will the students learn? We have not allowed phones to the teachers because some teachers have been caught using the phones in the classroom”).

There was a lot of stress on keeping the teachers under constant watch, keeping them on their toes, and creating an environment of immediate responsiveness. It is believed that the teachers should not slack off on the job. During these meetings, teachers were advised on maintaining discipline and order in their classrooms and what they can do to ‘manage’ students. Also, the teachers were not allowed to discipline them as they wished. Before meting out any major punishment or decision, the Principal had to be consulted.

Furthermore, the Principal organised regular meetings with the teachers where she took reports on day-to-day matters concerning pedagogy, classroom management, assessment and updates on any upcoming school event. There were several instances where teachers were reprimanded for not doing their given tasks on time. They were held accountable and were expected to submit their work before time for a review. These practices ensured that the teachers and students stayed in a perpetual state of alertness and hypervigilance.

The Principal, in one of our earliest meetings, expressed her desire for the school to be more ‘convent-like’, insisting on mimicking a life of order, discipline and regularity that a convent school offers, in her opinion. That was why she was very keen on me taking up a supervisory role for the teachers, keeping

an eye on them, and checking the extent to which they performed their roles. The educational ideal of the school is tied to the disciplinary ideal. The imagination of a good child is closely related to the value of discipline exhibited in school with teachers and peers. Good behaviour and strict discipline reflect the quality of education they have.

Conclusion

School discipline, during observations, seemed to have two main goals: maintenance of order, and socialisation. Discipline was associated with the need to maintain an environment conducive to learning. Indiscipline and disruptive behaviour, as it is believed, distract the children from the educational function of the school. Discipline was also a mechanism of socialisation. In addition to teaching academic subjects, the school aims to inculcate values so that children can become productive citizens of society. Discipline was perceived as a means for teaching students socially appropriate behaviours and attitudes.

Based on the study of this school, it appears that the educational ideal and the imagination of an educated person are closely tied to the level of discipline engendered in the everyday practices of the school, internalised and enacted by teachers and students. The disciplinary practices in school sought to create docile and obedient bodies. The study's findings and insights into the everyday disciplinary regimes of school are not novel. Similar practices have been observed in other schools and among other teachers in diverse contexts as the literature review points out. The data points towards the ways in which the themes of discipline, order, punishment, control, and the moral ideals are internalised as part of teachers' beliefs, reinforced by school leadership's vision and practices. Results indicate that teachers view 'discipline' as 'order and control' as the 'soul' of any formal educational institution, and consider it a vital part of the school experience. The categories of order, rules, obedience, respect and service are given significance and of utmost priority among teachers' perceptions of discipline.

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