

Voices of Teachers and Teacher Educators



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Voices of Teachers and Teacher Educators

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About the Journal

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

Call for Contributions

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

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'Voices of Teachers and Teacher Educators' largely gives space to contributions with different experiences, questions, suggestions, perspectives as well as critical comments on different aspects of Teacher Education and Schooling for publication. 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 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 the 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 exposition of a point of view / uncritical / hypercritical presentation of an experience. Preferably the papers should be approximately 3000 words. The paper must include an abstract 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, so please check before you send it. For those who are citing other author's work or their own work, please ensure that there are not many quotes from any previously published text. You can not take any material from any published work including your own. You must keep the amount of material you cite to the minimum, and give reference to the original. Whatever you wish to write in the paper should be linked to your own work and written 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 this cannot be through the use of the 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

It gives us great pleasure in bringing this new issue of Voices of Teachers and Teacher Educators before you. This issue contains 11 papers from different authors of background showing the diversity of the kind of people who contribute to Voices of Teachers and Teacher Educators. We get a lot of papers which are taken through a strict review process. We bring into the issue papers that the referees have found suitable for this publication. We thank all the contributors and the referees who do the tedious job of reviewing the paper and giving detailed feedback wherever necessary.

The task of enabling the inclusion of all children in the process of learning in schools making education is a daunting one. There have been many micro level and macro efforts to make this possible. While some of the principles emanating from such processes have been accepted and have become a part of the discourse, putting them on the ground has been a challenge. Concerns about the excluded and underperforming children as well as those who drop out have been expressed in each of the policy documents and in the curricular documents as well. Each such policy document has been followed by activities that are expected to make the system inclusive so as to empower and enable those who are classified generally as non-performers and are virtually non-participative in the classroom processes to recognise their potential to learn and ensure that they do learn. Inclusion has to be seen not only in the context of special physical, physiological and psychological abilities but also in the context of linguistic, cultural, social and political diversities. The policy and the curricular framework documents, both past and current, have emphasised this need and suggested ways to make this possible. The challenges in making this possible are many including those of resources but there are also concerns about the lack of sensitivity and shallowness of the understanding of these issues.

This is one of the important concerns around which papers have been submitted for this particular issue of Voices of Teachers and Teacher educators. This issue carries four such articles. These four articles are from scholars and students of different backgrounds and explore the multiple dimensions of the issues linked to inclusion. The title and the authors of these papers are **'Perception of Students towards Culturally Responsive Pedagogy'**, by Shireesh Pal Singh; **'Growth Mindset Pedagogy in Inclusive Classroom'**, by Dr Anjali Sharma and Sukanya Singh; **'Right to Primary Education and Disadvantaged Children in Urban Slums: Context and Concerns'**, by Rajdeep Dutta, Dr. Joyashri Dey, and Prof. Subhabrata Dutta; **'Understanding the Lives of Children in Institutional Care and its Effects on Development'** by Anubha Rajesh, Seema Naaz, and Aghna Shujat. The last study is an intervention study to mitigate the negative effects of growing up in institutional care on the lives of children in an institution in Delhi.

The issue also carries a paper about the preparation of teachers for making inclusion possible in the schools. The title of this paper is, **'In-Service Training Programmes Related to Inclusive Education: Perspectives of Elementary School Teachers'**. The authors of the paper are P. Ponnusamy and Smitha Sankar.

There is no doubt about the importance of teachers, their status and their knowledge in the context of thinking about the quality of education. Apart from the paper on the understanding of Inclusive education in the minds of the elementary school teachers the issue has four

other papers that are concerned with teachers. The first one is titled, **'Exploring Pre-Service Teachers' Understanding about Scientific Inquiry'** and is by Dr Kalyani Akalamkam. Then there is the paper that deals with the pre-service preparation of teachers and has the title, **'Professional Preparation of Pre-Service Teachers Post NEP-2020: Some Suggestive Changes for Quality Improvement'**. This paper is by Dr Indrajeet Dutta. There are two other studies that are about teachers. These explore some implications of COVID 19 for the teachers and their role. The first one is on the **'Plight of Chemistry Teachers in Remote Teaching during COVID-19 Pandemic'**. This paper is authored by Dr Narendra Kumar, Dr Easwar Srinivasan and Nidhi. The last paper in this category is about how students look at their experience of online learning during the COVID 2019. The paper has a very provocative title that attempts to comment on the role and importance of teachers in education from the point of view of students. The title of the paper is **'Perceptions of students' online learning experience during the covid-19 pandemic in the state of Nagaland: Are teachers dispensable or indispensable actors in an era of digital education?'** The paper is written by Niboli T Awomi.

There is one more post Covid study on the awareness about health issues among teachers. Entitled **'Awareness of Health, Hygiene, and Sanitation among the Elementary School Teachers and students: A Post Covid Status Survey'**. This paper is authored by Nutan Pandey. It is a small study involving 9 teachers and 90 students whether there is an increased level of care and concern following COVID and is focussed on schools of different kinds in Lucknow. The last paper is a study on the map skills of children of West Bengal by Dr Md Nawaz Sarif. The paper entitled **'Map Skills of Secondary Students in Relation to their Gender, Locality, and School type'**. The study is about seeing if there are any differences among students in their' map skills in terms of their gender, locality, and school type.

We apologise for the delay in uploading this issue of Voices of Teachers and Teacher Educators. We look forward to suggestions regarding the issue and also articles and papers that are linked to education of children or their teachers. While we carry quantitative studies we would like them to have some substantial statements rather than just numbers and statistics. We therefore would request authors doing elaborate quantitative studies to send their papers elsewhere and send to Voices only if it has some qualitative educational or conceptual implications.

It gives us great pleasure in bringing this new issue of Voices of Teachers and Teacher Educators before you. This issue contains 11 papers from different authors of background showing the diversity of the kind of people who contribute to Voices of Teachers and Teacher Educators. We get a lot of papers which are taken through a strict review process. We bring into the issue papers that the referees have found suitable for this publication. We thank all the contributors and the referees who do the tedious job of reviewing the paper and giving detailed feedback wherever necessary.

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only in the context of special physical, physiological and psychological abilities but also in the context of linguistic, cultural, social and political diversities. The policy and the curricular framework documents, both past and current, have emphasised this need and suggested ways to make this possible. The challenges in making this possible are many including those of resources but there are also concerns about the lack of sensitivity and shallowness of the understanding of these issues.

Perceptions of Students towards Culturally Responsive Pedagogy

Shireesh Pal Singh*

Abstract

Culturally responsive teaching demands diligent efforts and dedication for the high-level success of diverse students. A culturally responsive teacher recreates teaching-learning situations so that students work collaboratively with their peers and teachers to improve their achievement. Those practicing culturally responsive pedagogy must have high and positive expectations for their students to help them achieve academic success and reach their maximum potential. This research aimed to determine students' perception of culturally responsive pedagogy, as their responses will help to develop a framework for the same. Investigator selected 200 school students as a sample of research. A self-made three-point Likert scale was used to collect data, parametric and non-parametric statistics were used to analyze the data. The research results reveal that most students positively perceive culturally responsive pedagogy and have shown no differences when we compared them based on gender, category, and locale.

Key Words: Perception, Students, Culturally Responsive Pedagogy

1.1.0. Background

Culturally responsive pedagogy can be comprehensively defined with the work of Gay (2010), Nieto et al. (2008), and Ladson-Billings (1995a). According to Ladson-Billings (1995b), culturally responsive pedagogy is devoted to individual and collective acknowledgment. A culturally responsive teacher recreates a teaching-learning situation so that the students work collaboratively with their peers and teachers to improve their achievement. Culturally responsive teaching demands diligent efforts and dedication for the high-level success of diverse students.

Culturally responsive teaching holds an action-oriented caring stance that uses

imaginative strategies and demonstrates high expectations to ensure academic success for ethnically, culturally, and linguistically diverse students. Culturally responsive caring is a social responsibility, a moral commitment, and a pedagogical obligation. It requires that teachers use their knowledge, understanding, and strategic thinking to decide how to act in the best interest of their students. It realizes the connections students have with society, their communities, and each other.

Culturally responsive pedagogy is a learner-centered approach to teaching that includes cultural references and perceives the significance of learners' cultural backgrounds and experiences in all facets of learning and shows how learning takes place

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in a different cultural backdrop (Ladson-Billings, 1995a; Gay, 2010). Gay has proposed the viable definition for culturally responsive teaching as 'using the cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant and effective for them' (Gay, 2010, p. 31).

According to Ladson-Billings (1995b), Culturally Relevant Teaching refers to integrating students' background knowledge and prior sociocultural experiences into the curriculum and classroom teaching. Culturally Responsible Pedagogy is a pedagogy that reorganises the students' knowledge backgrounds, language, family structure, and social or cultural differences in order to acknowledge the psychological facts that all learners learn differently (Gay, 2002; Villages and Lucas, 2002). It is a student-centered approach to teaching, which recognises the importance of the student's cultural background and is meant to promote engagement, enrichment, and achievement of all the students by grabbing a wealth of diversity, acknowledging and nurturing the students' cultural strengths, and authenticating the students' lived experiences and their place in the world (Villegas & Lucas, 2002). The philosophy behind culturally responsive pedagogy is beyond identifying the cultural uniqueness of each student. It focuses on intentionally nurturing it to create and facilitate adequate learning conditions. A culturally relevant teaching approach is more suited to urban schools, where the teachers find it challenging and ill-prepared to address the student's linguistic, cultural, and racial differences. The underlining assumption of culturally responsive pedagogy is that cultural diversity is a boon that enriches the learning of all students, not a shortfall to overcome. According to Saenger (2002), the term 'culturally relevant pedagogy' is inter-changeably with several terms such as culturally appropriate, responsible, congruent, compatible, and multicultural

to explain a variety of productive teaching approaches in culturally diverse classrooms. Responsive means behaving appropriately in the teaching-learning context. Teachers should be responsive to their students by assimilating elements of their culture into their teaching. A culturally responsive teacher makes explicit the cultural issue, as central, to their teaching, learning, and schooling. This teaching stance is often not apparent in the rural educational context but in city schools where the teacher counters a variety of cultures in their teaching practices. Inquiring and interrogating on the issue of power, social justice, equality, and equity are typical in culturally responsive classrooms. A color-blind approach to teaching does not make any sense as it ignores critical aspects of the student's identities and sense of self (Staires, 2007). The practice of freedom, equality, and social justice is the key to culturally responsive teaching, which is centered on social change and justice and emboldens learners to engage in initiatives for social engagement. Gay (2010) conferred a list of 18 viable pillars of culturally responsive teaching, which included knowledge, attitudes, and skills during pre-service education programs to improve the school accomplishment of learners from diverse cultures. Culturally relevant teaching centres the students' culture in the teaching-learning process through three approaches: high expectations, promoting cultural competence, and promoting critical consciousness (Dickson, Chun, & Fernandez, 2015; Ladson-Billings, 1995b; Morrison al., 2008). For expectations, culturally relevant teachers overture a challenging curriculum and scaffold the student's learning. The teachers create a classroom environment that is respectful and inclusive and help learners to understand the cultures of their peers based on the learners' strengths. Culturally relevant teachers also create a cooperative and experiential learning environment where learners work in groups through activities. Teachers first understand the learners' culture by visiting their communities and home lives to promote cultural competence.

Moreover, teachers stimulate the learners' perceptions of their own and their peer's cultures by providing content from varied backgrounds. Culturally relevant teachers also adopt the learners' experiences, skills, and knowledge gained from their surroundings as considered in the classroom. Freire (2001), in his book *Pedagogy of Freedom*, urges all educators seeking an alternative to repressive education to renew their efforts to combat the cultural and social forms of discrimination. Culturally responsive pedagogy has this transformative potential if it continues revealing and engaging with social conditions that affect the education of culturally and linguistically diverse students. Culturally responsive teaching is a broad term that encompasses a variety of approaches, such as culturally relevant, culturally sensitive, culturally congruent, and culturally contextualized pedagogies.

Those practicing culturally responsive pedagogy must have high and positive expectations for their students to help them achieve academic success and reach their maximum potential. High expectations refer to the ability to communicate positive and specific expectations to students about what they are expected to achieve and be able to do (Cahnmann, 2005; Cahnmann & Remillard, 2002; Mitchell, 1998). Culturally responsive teachers possess positive and asserting views of their students and their ability to learn and achieve high success. They demonstrate genuine respect for students and create a classroom that promotes strong belief in their learning capabilities. They consider students' social and cultural identities as assets rather than barriers. They also devise instructional strategies through challenging and engaging exercises in the context of students' social and cultural backgrounds (Heilberg, Tharp, & De-Geest, 2000).

Following are the ways through which a teacher can demonstrate and nurture culturally responsive pedagogy in their classrooms:

- Spending time with the students outside classrooms.

- Relate the students' home environment with the school's culture.
- Build rapport with the parents of the students.
- Resolve student-teacher conflicts.
- Assimilating the cultural norms, values, and beliefs of other cultures.
- Promote problem-solving and participatory experiences.
- Appreciate the students' learning capabilities.
- High expectations for the students' academic success.
- Incorporate narratives of various cultures while teaching in the class.
- Culturally relevant teaching strategies.
- Culturally familiar examples.
- Engaging in different multicultural activities of the school.
- Multiple alternative assessment (portfolio, rubrics, and anecdotal records, etc.) techniques.
- Incorporating assessment as learning (self and peer assessment).

Some students are more susceptible to low expectations due to societal biases and stereotypes linked with their sociocultural identity. These societal biases negatively and concretely impact the academic performance of ethnically, culturally, and linguistically diverse students. Over time, low expectations hinder learning and negatively affect the students' attitudes and motivation, leading to fulfilling prophecies. Educators can play a prominent role in eliminating such persistent discrepancies in the student's achievement by consciously demonstrating specific, observable, and measurable behaviors and instructional practices to all students (Kransnoff, 2016).

This research was conducted in a phased manner. In the first phase, to explore the cultural intelligence of teachers and patterns of culturally responsive pedagogy adopted by them in schools, the investigators developed a cultural intelligence scale. The elements of the cultural intelligence scale were identified

by studying the review of research works and other relevant literature. In the second phase, to study the attitude of teachers and teacher educators towards culturally relevant pedagogy (CRP), an attitude scale was developed. In the third phase, to explore the perception of students towards culturally responsive pedagogy, a perception scale was developed by the investigators. Finally, the investigators presented a comprehensive framework for culturally responsive pedagogy, which is validated by the experts in the field.

This research was carried out to discover the elements of culturally relevant pedagogy and develop the framework for culturally responsive pedagogy. Research shows that no teaching strategies will persistently engage all the students in the teaching-learning process. The key is to help the learners to relate teaching content to their cultural background. Research indicates that teaching ignoring the students' cultural norms and communication stimulates students' resistance, while responsive teaching accelerates student involvement. To that end, the investigator has developed a comprehensive framework for culturally responsive pedagogy that crosses disciplines and cultures to engage and motivate learners while respecting their cultural norms and values. It holds the dynamic mix of class, caste, gender, religion, region, and family that contributes to every student's cultural identity.

Culturally Responsive Pedagogy is devoted explicitly to both individual and collective acknowledgment. A culturally responsive teacher creates a teaching-learning situation so that the students work collaboratively with their peers and teachers to improve their achievement. Culturally responsive teaching holds an action-oriented, caring stance, which uses imaginative strategies and demonstrates high expectations to ensure academic success for ethnically, culturally, and linguistically diverse students. Culturally responsive caring is a social responsibility, a moral commitment, and a pedagogical

obligation. It requires that the teachers use their knowledge, understanding, and strategic thinking to decide how to act in the best interest of their students.

Based on reversing culturally responsive teaching literature and data analysis of cultural intelligence, the attitude of teachers, and the perception of students, the investigators have identified the following crucial elements regarding the framework of culturally responsive teaching. The elements are Collaborative Teaching, Instructional Scaffolding, Social Justice, Critical Thinking, Child-Centered Instruction, and Assessment Practices.

Based on the above ten identified dimensions of culturally responsive pedagogy, the researcher has developed a perception scale to know the perception of students towards culturally responsive pedagogy; How they feel and react when the teacher is using or would create a culturally responsive environment during their teaching-learning process.

1.2.0. Rationale of Research

Researchers have found that most research on Culturally Responsive Pedagogy has been conducted to assess teachers' perceptions and provide a conceptual backdrop for culturally responsive pedagogy. Few studies were conducted on the influence of culturally relevant teaching on racial socialisation in schools (Aronson et al., 2016; Morrison et al., 2008; Aldana & Byrd, 2015). Some research was conducted on culturally relevant teaching, critical consciousness, and academic achievement, such as Christianakis (2011), Rodriguez et al. (2004), Epstein, Mayorga, & Nelson (2011), Martell (2013), Stovall (2006), Laughter & Adams (2012). Some of the researchers explored the attitude of teachers toward culturally responsive pedagogy, such as Aldana et al. (2012), Brozo et al. (1996), Dessel et al. (2006), Spencer et al. (2008), Thomas et al. (2008).

Various studies were also conducted on the relationship between culture and

learning to explore how cultures impact the students' abilities to participate and learn (Boykin et al., 2005; Charlesworth, 2008; Tsou, 2005). It was evident from the reviews of related literature that no study was found in the researchers' knowledge of developing a framework for Culturally Responsive Pedagogy in the Indian context. The primary and crucial reason for selecting this study has been the absence and lack of a single research that addresses the issues related to students' perception of implementing culturally responsive pedagogy in their classrooms.

1.3.0 Research Objectives

To study the perception of students towards culturally responsive pedagogy.

- To explore the perception of students towards culturally responsive pedagogy.
- To compare the mean perception score of male and female students towards culturally responsive pedagogy.
- To compare the mean perception score of rural and urban students towards culturally responsive pedagogy.

- To compare mean perception scores based on caste categories such as Schedule Caste/ Schedules Tribe (SC/ ST), Other Backward Class (OBC), and General category Students towards culturally responsive pedagogy.

1.4.0. Research Design

As the given research was carried out on a sample of students to investigate their perception of culturally responsive pedagogy, the researchers adopted a descriptive survey method as the research design. A three-point Likert Scale was developed and administered to 200 school students to study students' perception of culturally responsive pedagogy. The perception scale has 48 items distributed under different dimensions of culturally responsive pedagogy.

1.5.0. Sample

Two hundred secondary school students were selected to know their perception of culturally relevant pedagogy. The following tables show the distribution of samples.

Table.1. School-wise Distribution of Sample

S.N.	School Name	Male	Female	Total
1.	Rashtrabhasha Madhymik Vidyalaya, Wardha	5	5	10
2.	Swawlambi Vidyalaya, Wardha	9	1	10
3.	Saraswati Vidyalaya, Shankarnagar, Wardha	5	5	10
4.	Bhavan Loyads Vidya Niketan, Wardha	3	7	10
5.	Aragami High School, Pipri Meghe, Wardha	7	13	20
6.	New English High School, Wardha	1	13	14
7.	Daulat Sing Vidyalaya, Wardha	9	11	20
8.	New Kamla Nehru High School, Wardha	8	13	21
9.	Ramabai Deshmukh Public School, Wardha	11	17	28
10.	Ratnibai Vidyalaya, Wardha	3	19	22
11.	Sant Tulsi Global School, Wardha	6	3	9
12.	Sadhana Inter College, Karui, Azamgadh, U.P.	4	2	6
13.	Rohit Shikshan Sansthan, Azamgadh, U.P.	0	6	6
14.	Maharshi Arbind Shikshan Sansthan, Azamgadh, U.P.	14	0	14
Total		85	115	200

Table 2. Area-wise Distribution of Sample

Locale	No of Students	Total Students
Rural Students	77	200
Urban Students	123	

Table 3. Category-wise Distribution of Sample

S.N.	Category	Students
1.	SC/ST	51
2.	OBC	104
3.	GENERAL	45
Total		200

1.6.0. DATA ANALYSIS AND INTERPRETATION

To find out the perception of students towards culturally responsive pedagogy. The perception scale, having 48 items, was administered to a sample of 200 students from 14 schools. The data were further categorized and analyzed concerning the overall perception and dimensions-wise perception towards culturally responsive pedagogy. The mean perception scores towards culturally responsive pedagogy were

further analysed based on gender, category, and locality using various statistical techniques.

1.6.1. Overall Perception of Students towards Culturally Responsive Pedagogy.

To assess students' overall perception of culturally responsive pedagogy, item-wise responses of students have been presented and analyzed with the help of mean, standard deviation, and coefficient of variance. The results are shown in the following table.

Table.4 Descriptive Statistics

	N	Mean	Std. Deviation	C.V
Mean	48	2.2759	.19342	8.49861
Valid N (listwise)	48			

From Table 4, it can be seen that the mean score of the perception of culturally responsive pedagogy for students was found to be 2.27 on a scale of three. This reflects that students have a favorable reaction toward culturally responsive pedagogy. Further, the standard deviation is 0.19, which shows relatively tiny variations, and the coefficient of variance is 8.49%, which is relatively low and indicates that, as a group, the reaction towards culturally responsive pedagogy of the students was almost invariant and strongly favorable.

1.6.2. Comparison of Perception of Students towards Culturally Responsive Pedagogy based on Gender, Category and Locale

Parametric tests are based on the assumption that the data should have an expected or Gaussian distribution. The tests for normality calculate the probability that the sample has been drawn out from an average population. The null hypotheses used are:

Ho: The sample data do not significantly deviate from normality.

Testing and Interpretation of Normality Hypothesis: Perception of Male and Female Students Towards Culturally Responsive Pedagogy after Winsorization.

In the following Table 5, we have presented the result after the Winsorization of data.

From Table 5., it is evident that the statistical value of the Kolmogorov-Smirnov test of the

Table 5. Tests of Normality

Criterion Variable: Perception towards Culturally Responsive Pedagogy							
	Gender	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Perception	Female	.110	115	.002	.964	115	.004
	Male	.067	85	.200*	.983	85	.348

perception scores of female students towards culturally responsive pedagogy is 0.110, whose probability of significance at df (115) is .002, which is less than 0.01 level of significance. Hence, it is significant at a 0.01 level of significance. In this perspective, the null hypothesis, “the given distribution of the perception scores of female students towards culturally responsive pedagogy does not differ significantly from the normal distribution of perception scores,” is rejected. Therefore, it can be concluded that the assumption of normality of perception scores of female students towards culturally responsive pedagogy is not yet satisfied even after Winsorization.

It is also observed from the above Table 5, that the statistical value of the Kolmogorov-Smirnov test of the perception scores of male students towards culturally responsive pedagogy is 0.067, whose probability of significance at df (85) is .200, which is more than 0.01 level of significance. Hence, it is

not significant at a 0.01 level of significance. In this perspective, the null hypothesis, “the given distribution of the perception scores of male students towards culturally responsive pedagogy does not differ significantly from the normal distribution of perception scores,” is not rejected. Therefore, it can be concluded that the assumption of normality of perception scores of male students towards culturally responsive pedagogy is fulfilled.

It is evident, from the above explanation, that even after the Winsorization of data, the statistical value of the Kolmogorov-Smirnov Test shows that the distribution of female perception scores still does not fulfill the assumptions of normality, on account of which the investigators employed a non-parametric test (Mann Whitney U – Test) for further analysis of data.

Testing and Interpretation of Normality Hypothesis: Perception of Rural and Urban Students towards Culturally Responsive Pedagogy after Winsorization.

Table 6 . Tests of Normality: Kolmogorov-Smirnova

	Area	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Perception Score	Rural	.066	77	.200*	.980	77	.279
	Urban	.112	123	.001	.967	123	.004

From Table 6, it is evident that the statistical value of the Kolmogorov-Smirnov test of the perception scores of rural students towards culturally responsive pedagogy is .066, whose probability of significance at df (77) is .200, which is more than 0.01 level of significance. Hence, it is not significant at 0.01 level of significance. In this perspective, the null hypothesis, “the given distribution of the perception scores of rural students towards culturally responsive pedagogy does not differ significantly from the normal distribution of perception scores,” is not rejected. Therefore, it can be concluded that the assumption of normality of perception scores of rural students towards culturally responsive pedagogy is satisfied or fulfilled.

It is also observed from Table 6, that the statistical value of the Kolmogorov-Smirnov test of the perception scores of urban students towards culturally responsive pedagogy is 112, whose probability of significance at df(123) is .001, which is less than 0.01 level of significance. Hence, it is significant at 0.01 level of significance. In this perspective, the null hypothesis, “the given distribution

of the perception scores of urban students towards culturally responsive pedagogy does not differ significantly from the normal distribution of perception scores,” is rejected. Therefore, it can be concluded that the assumption of normality of perception scores of urban students towards culturally responsive pedagogy is not fulfilled.

It is evident from the above explanation that even after the Winsorization of data, the statistical value of the Kolmogorov-Smirnov test shows that the distribution of urban perception scores still does not fulfill the assumptions of normality. However, the boxplot shows the normal distribution, on account of which the investigator has employed a non-parametric test (Mann-Whitney U – Test) for further data analysis.

Testing and Interpretation of Normality Hypothesis: Perception of different caste categories such as Schedule Caste/ Schedules Tribe (SC/ST), Other Backward Class (OBC), and General category Students towards Culturally Responsive Pedagogy after Winsorization.

Table 7: Tests of Normality— Kolmogorov-Smirnova

	Category	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Perception Score	SC/ST	.094	51	.200*	.970	51	.211
	OBC	.081	104	.089	.972	104	.028
	General	.116	45	.153	.950	45	.050

From the Table 7, it is evident that the statistical value of Kolmogorov-Smirnova of the perception scores of SC/ST students towards culturally responsive pedagogy is 0.094, whose probability of significance at df (51) is .200, which is more than 0.01 level of significance. Hence, it is not significant at a 0.01 level of significance. In this perspective, the null hypothesis, “the given distribution of the perception scores of SC/ST students

towards culturally responsive pedagogy does not differ significantly from the normal distribution of perception scores,” is not rejected. Therefore, it can be concluded that the assumption of normality of perception scores of SC/ST students towards culturally responsive pedagogy is satisfied or fulfilled.

It is also observed, from Table 7, that the statistical value of the Kolmogorov-Smirnov test of the perception scores of OBC students

towards culturally responsive pedagogy is .081, whose probability of significance at df (104) is .089, which is more than 0.01 level of significance. Hence, it is not significant at 0.01 level of significance. In this perspective, the null hypothesis, “the given distribution of the perception scores of OBC students towards culturally responsive pedagogy does not differ significantly from the normal distribution of perception scores,” is not rejected. Therefore, it can be concluded that the assumption of normality of perception scores of OBC students towards culturally responsive pedagogy is fulfilled.

It is also observed, from Table 7, that the statistical value of the Shapiro-Wilk test of the perception scores of General students towards culturally responsive pedagogy is 0.950, whose probability of significance at df (45) is .050, which is more than 0.01 level of significance. Hence, it is not significant at 0.01 level of significance. In this perspective, the null hypothesis, “the given distribution of the perception scores of General students towards culturally responsive pedagogy does not differ significantly from the normal distribution of perception scores,” is not

rejected. Therefore, it can be concluded that the assumption of normality of perception scores of General students towards culturally responsive pedagogy is fulfilled.

It is evident from the above explanation that after the Winsorization of data, the statistical value of the Kolmogorov-Smirnov test shows that the distribution of SC/ST, OBC, and General student’s perception scores fulfills the assumptions of normality, on account of which the investigator has employed a parametric test (One-way ANOVA) for further analysis of data.

Comparison of Mean Perception Scores of Male and Female Students Towards Culturally Responsive Pedagogy.

The second sub-objective of the study was to compare the mean perception scores of male and female school students toward culturally responsive pedagogy. The data were analyzed with the help of the non-parametric Mann-Whitney U – Test to compare the mean perception scores of male and female students. The results are given in the Table below.

Table 8: Summary of Mann-Whitney U – Test for Mean Perception Scores of Male and Female Students Towards Culturally Responsive Pedagogy based on Category

	Locale	(N)	Mean Rank	Mann Whitney U Value	Sig.	Remark
Perception Score	Female	115	109.09	3,900.00	0.015	Significant
	Male	85	109.09			
	Total	200	88.88			

It is evident from Table 8, that both groups can be considered uniform because of excess similarity in the distribution of dependent variables in both groups. Therefore, it can be said that the p-value obtained from the Mann-Whitney U – Test is reliable. Further, it is evident, from Table .8, that the test statistics of the perception scores of school students towards culturally responsive pedagogy is $U = 3900.0$, whose probability of significance is .015, which is less than a .05 level of

significance. Therefore, the null hypothesis, “there is no significant difference in mean perception scores of school students towards culturally responsive pedagogy,” is rejected. It is clear from the mean ranks shown above in Table 8, that the mean rank of female students towards culturally responsive pedagogy is 109.09, which is significantly higher than that of male students, whose mean rank is 88.88. Hence, it can be said that female students have a higher positive

It is evident from the above Table 9 that both groups can be considered uniform because of excess similarity in the distribution of the dependent variable in both the groups. Therefore, it can be undoubtedly said that the p-value obtained from the Mann-Whitney U – Test is reliable. Further, it is evident from Table 9 that the test statistics of the perception scores of school students towards culturally responsive pedagogy is $U = 4445.0$, whose probability of significance is .465, which is more than at .05 level of significance. Therefore, the null hypothesis, “there is no significant difference in mean perception scores of rural and urban school students towards culturally responsive pedagogy,” is retained. It is clear from the mean ranks shown above in Figure 4.58 that the mean rank of rural students towards culturally responsive

pedagogy is 104.27, similar to that of urban students, where the mean rank is 98.14. Hence, it can be said that rural students have similar perceptions of culturally responsive pedagogy to urban students.

Comparison of Mean Perception Scores of SC/ST, OBC, and General Students Towards Culturally Responsive Pedagogy

The fourth sub-objective of the study was to compare the mean perception scores of SC/ST, OBC, and General school students towards culturally responsive pedagogy. For comparing the mean perception scores of SC/ST, OBC, and General students, the data was analyzed with the help of one-way ANOVA. The results are given in Table 10 below.

Table 10: Group Statistic

Criterion Variable: Perception towards Culturally Responsive Pedagogy				
	N	Mean	Std. Deviation	Std. Error
SC/ST	51	109.90	10.64	1.490
OBC	104	108.73	9.66	.947
General	45	111.68	9.01	1.34
Total	200	109.69	9.80	.693

Table 10 shows that the standard deviation of the perception scores of SC/ST students towards culturally responsive pedagogy is 10.64, which is greater than the distribution of attitude scores of OBC students, which is 9.66, and General students, which

is 9.01. This is almost equal in all the groups; therefore, it can be concluded that assumptions of homogeneity of variance between SC/ST, OBC, and General students are not violated.

Table 11: Test of Homogeneity of Variances

Test of Homogeneity of Variances			
Leven's Statistic	df1	df2	Sig.
.746	2	197	.476

Further, it can be observed from Table 11, that statistic of Leven's test for equality of variance ($F = .746$, $P = .476 > .01$) is not

significant at the .01 level of significance. Therefore, the null hypothesis, “There is no significant difference in the homogeneity

of variance of SC/ST, OBC, and General students' group," is not rejected. Hence, the assumptions of homogeneity of variance are

satisfied here. In this situation, a p-value of traditional ANOVA would be considered to match the results.

Table 12: Summary of One-Way ANOVA of Teacher's Perception Towards Culturally Responsive Pedagogy based on Category

Criterion Variable: Perception towards Culturally Responsive Pedagogy					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	277.779	2	138.890	1.451	.237
Within Groups	18860.616	197	95.739		
Total	19138.395	199			

Table 12 shows that F-value is 1.451, whose probability of significance (df - 2, 197) is .237, which is greater than 0.05. Hence, it is not significant at 0.05 level of significance. It indicates that the mean attitude scores of SC/ST, OBC, and General students towards culturally responsive pedagogy do not differ significantly. Hence, the null hypothesis, "there is no significant difference in mean perception scores of SC/ST, OBC, and General students towards culturally responsive pedagogy," is not rejected. Therefore, it may be concluded that the perception of SC/ST, OBC, and General students towards culturally responsive pedagogy is equally optimistic.

1.7.0. FINDINGS AND DISCUSSION

1.7.1. Findings

The following are the findings of the present research:

1. The mean scores of students' perceptions of culturally responsive pedagogy were favorable. Further, the standard deviation showed relatively small variations, and the coefficient of variance is below 10, which is relatively low. This indicates that the group's reactions towards culturally responsive pedagogy for students were almost invariant, and the reactions were strongly favorable.
2. The perception scores of male and female school students towards culturally responsive pedagogy were found to be significant. The mean ranks clearly showed that the female students' perception of culturally responsive pedagogy is significantly higher than that of male students. Hence, it can be concluded that female students have a higher positive perception of culturally responsive pedagogy than male students.
3. The perception scores of rural and urban school students towards culturally responsive pedagogy were not found to differ significantly. The mean ranks showed that the perception of rural students towards culturally responsive pedagogy was equal to that of urban students. Hence, it can be concluded that both rural and urban students have similar positive perceptions of culturally responsive pedagogy.
4. The mean perception scores of SC/ST, OBC, and General students towards culturally responsive pedagogy do not differ significantly. Therefore, it may be concluded that the perception of SC/ST, OBC, and General students towards culturally responsive pedagogy is equally optimistic.

1.7.2. Discussion of Findings

It is clear from the results that the perception of students towards culturally responsive pedagogy is found to be favorable. This is a positive finding. This finding is supported by Samuels, Samuels, & Cook (2017); Huh, Choi, & Jun (2015); and Savage et al. (2011). However, Ancis, Sedlacek, & Mohr (2000) reported findings differently than our research. It was found from the research review that there were only few research works where the perception of students towards culturally responsive pedagogy was assessed, and most of the research work based on culturally responsive pedagogy was done outside India. So, the findings have been supported based on these available research studies.

Further, students' perception of culturally responsive pedagogy was found to differ significantly when compared based on Gender. The perception of female students towards culturally responsive pedagogy was found to be significantly more positive than that of male students. It reflected that the female students perceive culturally responsive pedagogy as an instructional practice equally conducive to learning for all students. They positively perceive multicultural knowledge and awareness and advocate freedom, equality, and justice for everyone. The female students might be more sensitive and sensible towards the critical components of culturally responsive pedagogy than the male students.

Furthermore, the perceptions of rural and urban students were found to be equally positive towards culturally responsive pedagogy. It indicates that both rural and urban students support multicultural awareness, high expectations, collaborative learning, critical thinking, and instructional scaffolding as the fundamental dimensions to fulfill the goal of multicultural education. They both seem to perceive culturally responsive pedagogy as a progressive approach to empowering the classroom and total school environments.

It was also found, from the present findings, that the mean perception scores of SC/ST, OBC, and General students towards culturally responsive pedagogy were not found to differ significantly. It informs that students belonging to different social categories promote culturally responsive pedagogy practices, which, in turn, can bridge the cultural gaps between teachers and students to facilitate the academic achievement of all students. The students might have high expectations from their teachers to appreciate the students' learning capabilities and individual differences, irrespective of their sociocultural background.

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Growth Mindset Pedagogy in Inclusive Classroom

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Abstract

The study themed to explore the growth mindset theory from the pedagogical perspective and its viability for inclusion in the classroom. To reach the theme, the study focused on three questions: What are the growth mindset pedagogical practices? How do these practices assist in creating a growth mindset classroom culture? What kind of attitude develops among learners? A qualitative approach was employed to fulfill these concerns. A field survey in an inclusive school was undertaken, and data was collected using observation and interview schedules on 30 participants. The study identified various growth mindset pedagogical practices and found that those practices assist in creating a growth mindset classroom culture and develop the growth mindset of the teachers and learners, which leads to the attitude among the learners to push them for learning in all circumstances. It is recognised from the growth mindset theory, which produces a specific pedagogical practice mentioned in the analysis part of the paper, named growth mindset pedagogy, that is viable for inclusion in the classroom.

Keywords: Growth Mindset Pedagogy, Inclusive Classroom, Growth Mindset Pedagogical Practices

Introduction

The inclusion of students from diverse backgrounds and learning needs has gained momentum in recent decades. Conscious efforts are being made globally to include differently-abled children in mainstream classrooms. The biggest challenge to inclusion is the lack of proper knowledge, training, and attitude (Blackie, 2010; Pingle & Garg, 2015; Sharma et al., 2017; Biswas, 2018). The present study proposes a solution-finding approach for implementing a growth mindset in an inclusive classroom.

Based on intelligence theories, explicit and implicit aspects have two opposite views. The explicit theorists believe that intelligence is fixed and cannot be changed, while implicit theorists believe intelligence is malleable and depends on a person's mindset. Carol Dweck has described mindset as a "Fixed mindset" and a "Growth mindset" (Dweck, 2006; Dweck & Yeager, 2019; Haimovitz & Dweck, 2016). The fixed mindset proposes the belief that talents, smartness, and intelligence can never be altered (Dweck, 2006; Stipek & Gralinski, 1996). In contrast, the growth mindset proposes that "intelligence is

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malleable” and can be developed through hard work, practice, and perseverance (Dweck, 2006).

The key idea of the growth mindset has an immense impact on the understanding of teachers and learners about the concept of “success” and “failure” (Macnamara & Rupani, 2017; Sassenberg & Vliek, 2019). Learners who face failures in their academic experience or wider lives begin disbelieving their pin potential and producing lower achievements. Teachers can help them to shatter this fixed mindset by emphasising a growth mindset based on valuing ‘efforts made’ (Haimovitz & Dweck, 2016). The concept of the growth mindset is key to creating an inclusive classroom environment.

Review of literature

Pramanik et al. (2018) examined teacher-related variables such as gender, age, teaching experience, grade level, the period of contact with differently-abled children, and personality factors, which may determine a teacher’s attitude towards inclusion. It is found that the moderate attitude of school teachers is one of the causes of problems towards inclusion (Paramanik et al., 2018; Sharma, 2020). In the study of Blackie (2010), half of the teachers opined negatively towards inclusion due to lack of training, unrealistic expectations, lack of resources, inability to give special attention to each student, and class size. Teachers’ attitudes are also influenced by the nature and severity of students’ disabilities (Beyene & Tizazu, 2010). Notably, in this context, Sharma et al. (2017) analysed teachers’ attitudes and found higher positive attitudes towards the inclusion of students with “orthopedic challenges” while there were apprehensions about students’ inclusion with vision, speech, and hearing impairments. Implications from the above discussion highlight a critical need to build up teachers’ growth mindset to bring full inclusion into classrooms.

Growth mindset pedagogy emerges to be a plausible solution between inclusion

and pedagogy. In inclusive schools, where there are enormous individual differences among the learners, shifting from a fixed mindset to a growth mindset can enhance their performance (Buchanan & Kern, 2017; Sassenberg & Vliek, 2019). Learners become confident and active partners in teaching-learning by acquiring growth mindset skills like resilience, self-advocacy, and positive thinking.

The case study of Rissanen et al. (2019) in a Finnish elementary school about growth mindset pedagogy-based classroom practices paves path-breaking implications easily applied to an inclusive classroom. Their work highlights some critical points of growth mindset pedagogy, forming the current study’s foundation. Some of the indicative issues are: motivating learning processes of the students, interpretation of students’ personalities and not results, actively opposing students’ fixed mindset behaviors, fostering a belief in the supremacy of success, not educating all students on how to endure obstacles or failure and inculcating perseverance to face the adversities. In this context, an urgent need is identified to increase the positive level of teachers’ attitudes toward inclusion (Sharma, 2020). A growth mindset may play a vital role in creating an inclusive environment where diverse learners with different perspectives receive similar content depending on their mood (Buchanan & Kern, 2017; Macnamara & Rupani, 2017; Sassenberg & Vliek, 2019). Individual differences and the corresponding needs of diverse learners in an inclusive classroom demand wide-ranging pedagogical practices (Tirri & Laine, 2017; Zhang et al., 2020). Growth mindset pedagogy helps to understand the essence of diversity and leads to a positive change in classroom situations (Blackwell, Trzesniewski & Dweck, 2007).

Here, it is crucial to understand how the growth mindset pedagogy successfully caters to diverse learning needs. It becomes possible because the growth mindset pedagogy does not induce the outside into the learners. Instead, it creates a powerful incentive and

positive attitude and mindset within the individual. This mindset as attitude drives the learners to learn even from failures. The studies of Dweck (2006) and Rissanen et al. (2019) suggest that a growth mindset is an attitude to take up challenges, an attitude to persist in obstacles and don't-give-up to failures, an attitude to see efforts as practices to mastery, an attitude to accept and learn from the criticism and philosophy to discover the inspiration from others' success.

Purpose of the study

The study aims to identify the growth mindset pedagogical practices that assist in creating the growth mindset classroom culture and inclusive environment.

Research Questions

- What are the growth mindset pedagogical practices?
- How do these practices assist in creating the growth mindset classroom culture?
- What kind of attitude develops among learners?

Methodology

The **field survey** was conducted through a descriptive survey in an inclusive school known for its commitment to inclusive education and distinct pedagogical practices in Rajasthan India to find answers to the research questions. A sample of thirty participants selected through purposive sampling has been taken for the study, including the school headmaster, teaching staff, and learners with various disabilities.

The school is inclusive because it facilitates both the disabled and non-disabled students. Moreover, the school's name is self-explanatory; *Meeno Mano Vikas inclusive School*, Ajmer. Therefore, in this research, out of thirty samples, twenty students were disabled, and ten were non-disabled. Subsequently, the school is recognized under the Right to Education

Act of 2009 to promote equity and provide all kinds of children with a suitable learning environment.

Tools employed for the analysis were a semi-structured interview schedule and an observation schedule.

Data collection

The data was collected through an interview schedule with headteachers, teachers, and learners. At the same time, the participatory observation was done per the situation's demand. The observation went on for one month, producing qualitative data. Extensive notes were taken about the school's daily activities in a particular context of distinct pedagogical practices performed by the teachers and students' responses.

Analysis of data

The content analysis of data collected through the interview and observation schedule has been done and given below. The text in italics with inverted commas denotes the interview responses within the analysis. The text within inverted commas without italics indicates observation schedule responses for illustration to align with dialogue.

Findings about pedagogical practices that induce growth mindset

Trust building enables them to share their problems. They don't hesitate to ask about their queries, confusion, and doubts and even share their feeling and sentiments. Through this, mentors get the opportunity to remove their confusion and doubts and handle their emotions and sentiments. The teachers in the study school make a healthy connection with children, which induces enthusiasm to think and do beyond the box and its limitations. The fact is, if we want to change the mindset, specifically want to bring a shift from fixed to growth, the mentor needs to develop trust-building with students.

Teachers' belief in the learners' success is a prominent factor in pushing the growth mindset theory. The survey school teachers also expressed the same, and they have a connection with the student. So, they share their problems and have faith in teachers. Teachers have believed in their efforts, talent, and success expressed in their interviews and observed establishing a strong bond with the students to provide emotional support.

A reward is always appraised by psychologists, socialists, and educationists. On the path of learning, the child is always looking for appreciation, and it is always needed by everyone. The importance of reward for efforts and response is missing in our classroom, and it is associated more with achievements — thereby neglecting and hampering the learning process. Teachers in the survey school use frequent rewards for every genuine effort and response despite success. Here it is to be noted that tips are important for response to induce consistency in putting efforts and bring them to do so even in unfavorable situations. Encouraging efforts through frequent rewards allows them to take risks and make mistakes, creating a more flexible environment for learning.

See the child's response when asked, how do you learn new things? Are new things difficult for you?

"For learning new things, firstly, I try to make a difference in myself. I have found that the key characteristics of successful 'effort' are focus on performance and avoidance of negative responses/people/thoughts. My teachers allow me to learn in my way and time."

The teacher's responses on putting in the effort, making mistakes, and providing frequent rewards were like this;

"They are allowed to learn at their pace. Frequent rewards are provided for their responses and efforts. The focus is on individual progress and learning. We keep letting them make mistakes as this is the way to practice more and more, and they explore themselves."

Peer tutoring is a flexible way to scaffold learners that involve learners serving as tutors and tutees. Peer tutoring permits learners to get one-to-one assistance and opportunities to respond more being a small group. It facilitates the academic and social development of both. In survey school, peer tutoring is a powerful tool to achieve the maximum benefits of subject-based and skills-based learning. As required, the school adopted a different type of peer tutoring, like cross-age and same-age tutoring.

"Sometimes, I learn from my peers. Many of my friends with disabilities show great determination despite failures, and their never-give-up spirit inspires me."

Teachers reflected when asked, "What interventions do you adopt in inclusive classrooms"?

"The old ones support young students because classrooms are structured as mixed-age groups, and they get the opportunity to learn from same-age peers in group activities."

"It was also observed that in mixed-aged classroom where peer learning and sharing takes place, help-seeking and collaboration was encouraged."

Accept failures: The reward may not be the end story always in life. Failures are an essential component of life too. The individual needs to learn how to accept failures and respond to them to shift from a fixed to a growth mindset. For this purpose, the pedagogical practices are to share the other's stories of success, including a portrait of struggle and accepting failures. The survey school teachers shared that they use these practices to inspire learners, keep up their struggles, and stand against failures and limitations. Let us take students' reflections to visualize how they are practicing struggle and accepting failures in their daily life but are not ready to give up.

"After repeated failures, we can develop alternate strategies according to our disabilities to achieve our goal."

"We daily attend physiotherapy sessions and often experience failure."

The other way to look at it can be that we improve ourselves every time we make a new effort.”

Distribution of opportunities is a remarkable pedagogical practice as it indulges learners in learning and explores their interests, talent, and limitations. The survey school teachers expressed that they provide opportunities equally to the learners by conducting group activities, giving responsibility within the group, and focusing on individual participation. It is shared that there is no conventional and fixed way of assessment. It was also observed that, according to the student’s needs, flexible assessment methods are employed by recording each student’s daily progress and performing group activities and vocational skills. The important point is that the school adopted this to teach them socially accepted behaviors. Look at the response of the teachers when asked for the same.

“Tasks are given according to the interest of the student and the type of disability. Equal opportunities are given to the bright and underperforming students.”

“Assess by providing vocational training and recording individual progress. Evaluate by distributing responsibilities according to the student’s capabilities and focus on group activities where individual participation is encouraged.”

“Some notable facts during observation are; integrated teaching with the exploratory activities designed in the local context, visits to the actual occupation sites like stitching shop, factories, and local market.”

Parental involvement is not only encouraged but diligently recorded. Every student’s progress report is shared with the parent during scheduled visits. The school management facilitates teachers’ professional development by periodically organizing expert meetings, seminars, and workshops to update them about inclusive education’s innovative practices.

Classroom culture

Through the data analysis growth mindset pedagogical practices are identified. *The answer to question two*, how these practices assist in creating a growth mindset classroom culture, is drawn as; classroom culture is experiential learning designed through exploratory activities and vocational training in gardening, sewing, etc., in a local environment. They have the opportunity to work in groups and take responsibility. They are rewarded for effort, not success or failure; they continue to fail repeatedly, learn never to give up, and accept failure positively. They were also scaffolded by teachers and peers. Through mixed-age classes, they enjoy peer tutoring. Most importantly, they found that teachers believed in their success, effort, and talent, which drove them to progress consistently, and their small successes were celebrated in the group. Flexible assessments and teachers record daily progress based on learning rather than grades. They are free to make mistakes because mistakes are a fundamental learning method. So, learning in a fear-free environment allows them to clear doubts and reflect on specific issues. In this way, defined practices create a growth mindset in classroom culture.

Learners’ attitudes

To answer the third question, the growth-mindset pedagogical practices help learners to develop certain attitudes. Such as an attitude to struggle, an attitude to accept failure, an attitude to accept challenges, an attitude to seek opportunities, and the belief in hard work and talent; this way of taking things showed a shift in mindset (from a fixed to a growth mindset).

For example (A response), I have extreme eye difficulties and aspired to be a pilot, whereas my friend, who has severe reading and writing difficulties, wanted to become an official. We are aware of realities, so we have shifted ourselves to have a good social life,

simultaneously retaining around on a good job/work but keeping on trying for the best.

This shows that students accept failure or limitations and change their mindset according to the realities of life. It was observed that they continue with exploratory activities as per the capabilities to contextualize experiential learning.

It was observed that the school is inclusive with quite a high disabled population compared to other schools. The teachers have to work with the diverse group not only in respect of sociocultural diversity but various type of physical, mental, and intellectual, and other challenges also. They begin working with the learners at their own pace, despite differences and constraints, and they make them free to struggle to accomplish their goals and finish the tasks. They didn't decide on a common mark line for everyone to achieve. The teacher showed full patience and kept sharing the progress with their parents. They didn't run any common session timeline for every learning, didn't behave in a hands-off manner towards those who were not getting things, and continuously tried, again and again, to make the content comprehensible by breaking the task into small chunks/steps and facilitating scaffolding by peers. The teachers shared that after working in the sample school, they also transformed their thinking and personality. When they

joined, it was challenging for them to cope in that school or working culture that was different from the usual school environment.

Sometimes they face challenges when a child is not progressing; then they must work out reasons and ways to make the child learn and grow. In handling children, they also come across many doubts. They shared that patience, positive thinking, and faith/belief in themselves always helps them reach their goal.

Conclusion

The study revealed that the growth mindset pedagogical practices create a conducive classroom culture through which learners can develop the growth mindset or shift from fixed to growth, which is essential in the present era. The study again puts forward that teachers should adopt the growth mindset to believe in their learners' talent, efforts, and mistakes, and adopt the growth mindset pedagogical practices to develop the learners' attitude toward struggle, accepting failure, putting effort, and never giving up in any circumstances. These practices allow peers' involvement through group activities and peer learning. Thus, a positive and progressive mindset celebrates diversity and social cohesion within the class and caters to the needs of all learners.

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Right to Primary Education and Disadvantaged Children in Urban Slums: Context and Concerns

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Joyashri Dey**
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Abstract

Urban slums are a widespread phenomenon and appear in almost all cities worldwide. Slum-dwellers are underprivileged sections of urban society and are deprived of basic livelihood, health, and education. Education is a fundamental human right and a key indicator of a country's overall development. Societal progress and nations' socio-economic development depend upon their citizens' educational status. The Right to Education Act 2009 provides free and compulsory education to all with no discrimination. Children in slums were found to be more silently excluded, regularly irregular, and dropouts in elementary school stages than children in non-slum areas. Mostly, these issues are left unaddressed, but considering the value of education to society, they need to be addressed immediately. Hence, the current study focuses on urban slum children's rights to education and the challenges they face in their living conditions, homes, and social environments in the context of education. Also, an effort was made to cover the role of the non-formal education centre (under Sarva Shiksha Abhiyan) and intervention in promoting education. Besides, the study underlines the implications for the upcoming research and practice interventions for deprived slum children.

Keywords: Disadvantaged Children, Primary Education, Sarva Shiksha Abhiyan, Urban Slum.

Introduction

In post-modern times, rural people's central focus is entering urban spaces. Gathering and land sharing in urban spaces ultimately give birth to slums in cities worldwide. The wave of growing industrialisation, urbanisation, social changes, employment opportunities, and easy access to health and education has changed the urban population's size (Lewis, 2010; Laing, 2014; Sumangala,

2022). Education is one of the most important indicators of the socio-economic development of any nation. Studies (Husain, 2005; Nambissan, 2014; Bose, 2016) found that children in urban slums are the most deprived and often leave basic education. Due to a lack of awareness, concerns about the importance of education, and the need to transform their lives, the educational status of urban slums is very low. According to the quality index, the social lives of slum children

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are also deplorable. Living in the city in slum areas, each family has to buy everything, especially bread and butter. As a result of their poor living conditions, family members engage in economic activity at all ages. The environment in which they live is mostly unsanitary and serves as a storage facility (Laing, 2014; Herman, 1966). Dwellers in urban slums face a difficult situation regarding providing adequate education for their children. Concerning the importance of education in human life, the 86th Amendment to the Constitution of India, enacted in 2002, under Part III, inserted Article 21A, "Right to Education," as a fundamental right to offer free and compulsory education for all children between the ages of 6-14 years in such a manner as the state may, by law, determine. In connection to that, Jyoti Kendra Centers in Assam are one of the significant supportive non-formal educational programmes under Sarva Shiksha Abhiyan (SSA); considering the value of education to society, the government implemented the Right to Education (RTE) Act 2009, concerning educational safeguards for deprived slum children of the unreached area.

Right to Education: Child Rights Perspectives

Education is and will always be a significant indicator of establishing a solid foundation in a person's life. It contributes to the socioeconomic development of any society. Education is a route to learning or gaining knowledge, skills, beliefs, morals, and behaviour (Dutta & Dey, 2019; Sumangala, 2022). Since it is considered a factor in social development, slum communities are still educationally backward. Low educational attainment and high dropout rates are common in slum areas. Also, the educational backwardness of slum children makes them vulnerable to different problems that affect their personal and social environments (Nambissan, 2014; Tsujita, 2009; Herman, 1966). Literacy has been discussed as one of the crucial features of a nation's social

development, economic growth, social mobility, and political stability. In contrast, illiteracy rates have quickly been related to increased poverty, economic stagnation, and underdevelopment (Khasnabis & Chatterjee, 2007; Dutta & Dey, 2019). The actual responsibility of education is to modify behaviour and bring all-around progress to society. Indeed, it is deliberately planned to train, refine, and culture a child to lead a group life and effectively adjust to their environment. As a result, children receive an education due to the needs and requirements of the society in which they live. Besides, the child of today is the citizen of tomorrow, and so it is the main function of education to shape a child's life and the future of a country.

In the Indian context, the total literacy rate is 74.04 per cent for males, 82.2 per cent for females, and 65.5 per cent for both. According to the 2011 Indian census, primary school enrollment is 93 per cent, secondary school enrollment is 69 per cent, and post-secondary enrollment is 25 per cent. In reality, the literacy rate still needs to reach the goal of universalizing elementary education in the 6–14 years of age range in order to achieve 100 per cent enrollment and retention in all habitats. The Right to Education Act of 2009 (Article 21A of the Indian Constitution) mandates free and compulsory education for all children aged 6 to 14 years. Further, the nationwide Sarva Shiksha Abhiyan programme was started in 2002 to universalize elementary education by 2010. Other significant education regulations or programmes, such as Directive Principles of State Policy, indicate that children up to 14 years old are expected to receive free and compulsory education, UNCRC-survival, protection, participation, and development rights, Samagra Shiksha Abhiyan, and New Education Policy 2020. If implemented in spirit, these provisions could bring significant educational transformation to the slums. Presently, India ranks 92 in education among the 145 countries worldwide. It has directed many efforts

required in the field of education in India (India Today, 2015). In the context of Assam, the literacy rate scenario is unfavourably placed a little below (73.2%) as compared to the national average of 74.04 per cent. As per census data from 2011, Assam has the seventh-highest literacy rate in the North East, ranking seventh out of eight states. The average literacy rate of Silchar city is 90.93 per cent, with male and female literacy rates of 93.25 and 88.99 per cent, respectively, as per the 2011 census. Furthermore, there are still significant disparities between male-female, community, tribe, caste, class, religion, rural-urban, and urban slums.

Urban Slum Children: An Indian Context

Urban slums are a worldwide phenomenon found in almost all cities. Slum dwellers are underprivileged sections of urban areas and are unaware of the importance of education. The government of India has defined slum areas as those where the buildings are unfit for human habitation (The Slum Areas Improvement and Clearance Act, 1956). In general, slum dwellers live in small rooms with inadequate ventilation, use common and unclean toilets, prepare foods in unsanitary conditions, lack a proper environment for a child to prepare his or her lessons, and drains remain unclean—a common scenario (Bose, 2016; Laing, 2014). The physical environment and socioeconomic conditions in slums are both hazardous to one's health. Increasing health hazards in slums, such as skin problems, common colds, malnutrition, health issues, and seasonal and non-seasonal migration, are more frequent and largely affect a child's education (Khan & Azid, 2011; Phukan, 2014; Nambissan, 2020). Besides, studies (Aggarwal & Chugh, 2003; Husain, 2005) have pointed out that, along with educational backwardness, most of the children in the slums are dropping out of school in the preliminary stage of schooling. In 2011, approximately 1.37

crore houses, or 17.4 per cent of urban houses, existed in India (Shrinivasan, 2013). According to the 2011 Census of India, the child population aged 0-14 is estimated to be 29.5 per cent. In general, the universal goal of education, as it relates to children living in slums, must be included in education for national advantage. In Assam, nearly two lakh people reside in slums across 31 towns. The total slum population stood at 1,97,266. The figure of slum dwellers in Assam is the highest in the North East states. In the state of Assam, there are 1,17,124 slum dwellers, 70,979 recognised slum dwellers, and 9,163 notified slum dwellers (Bhuyan, 2013). Silchar city and its expansion have a total of 4,746 slums, with a population of 22,749. It is around 12.37 per cent of the population of Silchar city and its outgrowth, which is 178,865 (Silchar City Population, 2011). In India, the SSA and the government of Assam have launched various educational incentive programmes, such as the Jyoti Kendra education centre, Mid Day Meal, free textbooks, uniforms, copies, school bags, and teaching-learning materials, to promote better education in novel ways in slums. It is claimed that various learning opportunities are available for urban-deprived children living in slum areas, but only with a pen and paper. However, the reality of child education rates in slums is unfortunate, and most are deprived of the multifaceted issues of urban society.

Objectives

- To understand the socio-economic circumstances of Silchar Kalibari Char's slum dwellers
- To explore the challenges faced by disadvantaged slum children in achieving primary education
- To know the role of non-formal education centres (under SSA) and interventions to promote slum education

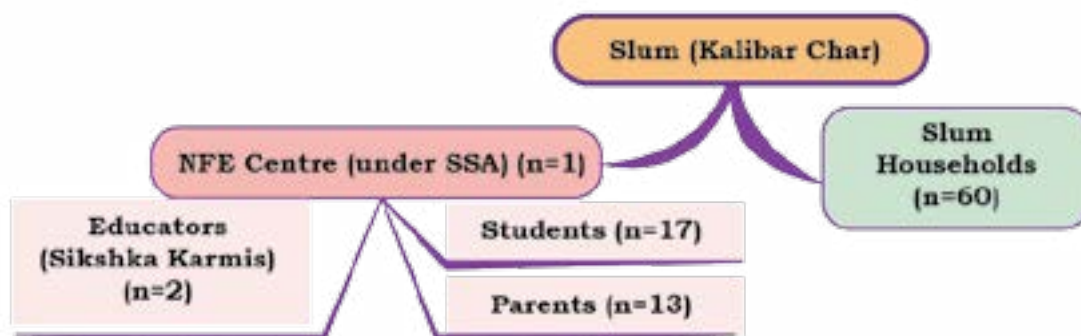


Diagram 1 : Illustration of Sample Size and Selection Procedure for Data Collection

Methodology

The current study utilised an exploratory research design to incorporate empirical data and secondary sources. For the study, the researchers employed a mixed (quantitative and qualitative) approach to gain an in-depth understanding of disadvantaged children's challenges and initiatives that have been taken by non-formal education centre for urban slum children's education.

Study Area: Geographically, the study was conducted in the urban slum of Silchar city, the second-largest city in Assam and the largest in the Barak valley, and has 26 notified slums as per the record of the Town and Country Planning Office and Silchar Municipal Board, 2018. Also, it is the city in Assam with the fastest population growth. This study is being conducted in a slum, namely the Kalibar Char slum of Silchar, because it is the city's oldest and most densely populated slum and has a non-formal education centre, namely the Sanjoy Gandhi Special Training Centre (Jyoti Kendra under SSA). The researcher selected purposively to have a fair idea of disadvantaged children's education in urban slums.

Sampling: The non-probability purposive sampling technique was adopted for the present studies. Sixty households (n=60) were selected from the Kalibari Char slum as a sample. Information about socioeconomic conditions and challenges to obtaining a primary education was gathered from households interviewed using an interview

schedule, informal discussions, and direct observation. Also, a non-formal education (NFE) centre (n=1), namely Jyoti Kendra (under SSA), located within the slum, where mostly deprived Kalibari Char slum children attend, is being studied. Apart from this, data related to the facilities and NEF centre was collected by conducting key informant interviews (KIIs) with educational workers known as Shiksha Karmis (n=2), students (n=17) and parents (n=13) of the centre, with the help of an interview guide and through informal discussions.

Data Collection and Analysis: An interviewing method was adopted to gather data for the study. Focused observations, self-reviews, and field diaries have been contentiously used as data. Statistical data regarded as secondary data sources are also used in this study. The study used unstructured and semi-structured interviews with an interview schedule and interview guide as data collection tools during the fieldwork. The quantitative data analysis was done using MS Excel and a simple mean calculation. At the same time, qualitative data collection and analysis are carried out simultaneously by presenting thematic discussions and narrative quotes and using MindMaster software for diagramming ideas that impart an understanding of the themes.

Findings and Discussion

In the following sections, the study digs into the themes of socio-economic conditions and

the challenges faced by disadvantaged slum children in obtaining an education. Also, explore the role of non-formal education centres (Jyoti Kendra under SSA) and education workers' interventions to promote slum education and children's rights to education.

Socio-Economic Status of the Slum Dwellers

Socio-economic conditions are an important indicator of a community's living standard. It reflects the overall picture of a particular community and its social surroundings. The study found that almost 65 per cent of families are nuclear and 35 per cent are joint families. Nuclear families have an average size of 4 to 6 members, whereas joint families consist of 10 to 12 members. Furthermore, the majority of the families (80%) have migrated from neighbouring districts and different parts of India, particularly from neighbouring districts, including Karimganj and Hailakandi districts of Barak Valley, Indian states like Uttar Pradesh, Orissa, Jharkhand, Bihar, and Tripura, as well as from other countries such as Bangladesh. In contrast, 20 percent of slum dwellers migrated from the Cachar district's rural villages to the city. It was found that 85 per cent are Hindus, and 15 per cent stay around the Muslim minority. According to data from the 2011 Census, 12.72 per cent of Silchar's population lives in slums. The Kalibari Char slum comprises 2500 families with almost 21000 inhabitants, and 80 per cent of families live in rented houses. The study discovered that 43 per cent of the population was between 6 and 14 years old.

Data has brought to light that slum dwellers with inadequate, unsafe, and unsecured housing are the bigger problems that remain among the slums. Similar results have been found in the study conducted by (Choudhury, 2006; Tsujita, 2009; Laing, 2014) on slums. Besides, two types of houses are mostly found, i.e., bamboo walls with a tin roof and brick walls with a concrete roof. There is no separate kitchen for cooking, one

common latrine, and a mostly unclean and unhygienic bathroom. There are no drains, so dirty water flows over the space, and garbage is found throughout the locality, spreading odours around it. The street dogs and cats catch the garbage, spreading the foul odour throughout the slum. Slum dwellers are mostly employed in daily labour, such as daily wage labourers, domestic helpers, rickshaw pullers, hawkers, drivers, delivery men, porters, sweepers, and footpath sellers. Around 12 per cent of heads of families (male or female) are not engaged in any economic work because of ill health, old age, or being addicted to alcohol or drugs. For this study, the slum dwellers' monthly household income was divided into three categories: (a) less than 3000, (b) between 3001 and 6000, and (c) 6000 and above. The study found that approximately 65 per cent belonged to the first group, nearly 26 per cent to the second, and 9 per cent to the third. Most parents are illiterate, and the mother's illiteracy rate (58%) is higher than the father's (42%). The literacy status among parents is lower. In this study, no single parent was found after the 10th grade. Simultaneously, studies (Choudhury, 2006; Tsujita, 2009; Khasnabis & Chatterjee, 2007) also found that low parental education levels in the slums reflect the most adverse attitude toward the importance of children's education. Furthermore, 11 per cent of children aged 6 to 14 are not enrolled, 23 per cent are enrolled but do not attend school regularly, 8 per cent are dropouts, and 58 per cent are continuing their education. Respondents highlighted that children are silently excluded from education because they attend school on an irregular, non-regular basis and mostly drop out between and after the upper and lower primary levels of schooling.

Challenges Faced by Children in Urban Slums in Obtaining Primary Education: Some Reflections

Slums are the hub of most societal problems. Children who live in slums are more likely

to become victims of prostitution, beggarly, child trafficking, child labour, and child marriage. It has been claimed that crime rates are higher even in the slums. There are numerous disadvantages or issues that urban slum children encounter, with the right to primary education being one of the most important indicators of human development (World Bank, 2006; UNESCO, 2011; Bose, 2016). The studies found that most of the children in the slums are irregular or drop out of education in the elementary school stage (Mugisha, 2006; Tsujita, 2009; Sumangala, 2022). They are deprived due to inadequate living conditions, large family size, terrible health, unsuitable home and social surroundings, seasonal migration, multilingual problems, their parents' illiteracy or low educational level, uncertain occupation and income, and an inadequate educational environment (Thapan, 1997; Bhan & Rodricks, 2012; Nambissan, 2020). For example, when the researcher interacted with a literate senior (63 years) slum dweller about why slum children do not attend school or dropouts. He highlighted—

"I observed that when a child is in class three and has not learned his or her lesson or is unable to read, he or she becomes disinterested in class four lessons. Once s/he is unable to complete the class three lessons. He/she failed to adjust to class four. . . unable to cope with other learned children. In fifth grade, he will not be able to read or write anything in front of his other friends. To save his/her minimum self-respect, the child stops going to school and becomes a dropout.

"Data also revealed that slum dwellers describe their children as being out of school because of the education system, teachers, parents, and, largely, our community. Furthermore, most families (95%) in slums are housed in single or double dark wet rooms with no proper ventilation and a bed for sleeping. They frequently use a single room for cooking, storing, washing, bathing, and other activities. For large

families 'accommodation,' most houses had bunk beds. They carried out activities like preparing vegetables, cooking food, watching TV, listening to music, and chatting in their single room. As a result, the home and surrounding environment are unsuitable for studying. Most families have three or four school-age children, with fathers or mothers being the sole earners. Furthermore, their occupation is insecure, and the family members rely solely on their earnings. In that context, the basic amenities of a family—three meals a day, health, and quality education, are tough to meet. It was discovered that water provided by the Silchar municipality was commonly used twice daily, in the morning and evening, for one hour in routine practice. They have to stand in long queues for water and store it for washing, bathing, cooking, and other purposes. Female children in their families are mostly responsible for standing in long lines and waiting for water. Besides, this is the noisiest time in slum areas during the water supply. The data found that the most common issues among children and adults in the slum are malnutrition and a lack of health and hygiene awareness. Diseases like tuberculosis, polio, anaemia, low pressure, skin disease, malaria, and deficiency of various vitamins and minerals are common in slums (Herman, 1966; UN-Habitat, 2007; Khan & Azid, 2011). Also, an NFE centre education worker (37 years old) observed,

"Among adult males, drugs and alcohol are consumed publicly. They spend most of their earnings on alcohol, drugs, or gambling instead of the family's basic requirements or their children's education. Addiction causes quarrels, slang language, physical violence with wives, and beating children . . . daily matters in slum households."

Thus, it badly impacts not only the child's socialisation process but also the child's behaviour in future activities. As a result, the home and surrounding environment in an urban slum are not conducive to a child's education. Even if he wants to, he is

distracted by personal and social issues and is unable to focus on his studies. Most urban slum families have migrated from rural villages, neighbouring districts, and other states. They used to visit their relatives for days and months for different ceremonies, like marriages, rituals, and festivals. However, visiting relatives interferes with their children's education and attendance, leading to poor academic performance. Moreover, the mother tongue of urban slum children mostly varies with the school's medium of instruction. The slum area is mixed with migrants from multi-lingual communities, i.e., Bangla, Baschpuri, Hindi, and wrongly pronounced English. As a result, children from urban slums frequently struggle to cope with the school's medium of instruction. Lack of interest in studying has resulted in school irregularities and silent school dropouts. Why are they dropouts? In the slums, the major problem is substance abuse. They have a massive impact on substances, being mostly drug addicts. They get into all addictions, whether in bidi, cigarettes, alcohol or any substance they get into and need money. When they needed money, they left school or education and insisted on trying to earn money differently. It can be bagging, rag picking, or child labour. Besides, an educated woman (33 years old) highlighted the spending culture in the slum. She quoted,

"I have closely observed some slum dwellers who earn more than 1,000 rupees daily but do not spend five rupees on a newspaper because they think buying a newspaper is a waste of money. At the same time, the same slum dwellers spend 300 rupees on foreign wine. I have seen the money they spend or give priority primarily to wine, mobile bills, and gambling."

Data also brought to light that slum cultures differ in terms of expenditure and the way they prioritise. Urban slum dwellers quickly get access to earning sources in the city. However, giving their time and money for children's education is worthless. They

have different types of amusement, but they are unaware of some basic facilities of human life, like health, education, and pure water, and they are not willing to know. Also, a lack of parental literacy and economic instability are the major causes of children's low educational status. For example, a parent of slum children expressed—

"I have five children, and I cannot guide . . . because I am not literate and do not know how to read or write. I have seen that schools alone cannot provide education without private tuition. Even if I wished to send my children to private tutors for proper education, I would not be able to do so because of our adverse economic position."

Simultaneously, data from slum parents described that, due to low-income family conditions, they engaged their children in many economic activities instead of schooling, like tea stalls, domestic work, and ragpicker activities, to support the family's livelihood. Overall, slum children's quality primary education is far from the child's right-based perspective, as mentioned in Sustainable Development Goal (SDG) 4 of quality and universal primary education. Although the government has taken some steps to encourage children at the micro-level to return to school and participate in the school education system in order to minimise the problems, to a large extent, the government, non-governmental organisations, and other like-minded individuals must come forward to provide special initiatives for deprived children in urban slums. Likely, the NFE centre under SSA, Assam, was also launched in slums to address the challenges of disadvantaged children for the educational upliftment of slum-deprived children.

Non-Formal Education Centre (Jyoti Kendra under SSA): Initiatives towards Disadvantaged Slum Children

The Non-formal Education Centre (Jyoti Kendra under Sarva Shiksha Abhiyan) is a specially run education training

centre in urban slums to include deprived slum children in the mainstream of the formal education system. The centres are established in urban slum areas for deprived slum children aged 6 to 14 years. With the goal of educating deprived children, such as, out-of-school children, working children, street children from various parts of the city (railway platforms, bus stands, market areas), juvenile delinquents, and children of commercial sex workers in urban slum areas, the main attention is to ensure their protection and educational rights, as they are the most vulnerable and excluded children in the existing education system.

Additionally, the role of the education centre is to promote the right to education for deprived urban slum children. Data reflected that every year, education workers from the centre conduct door-to-door surveys in urban slum areas to identify deprived urban children, such as out-of-school children, child labourers, and never enrolled children, among others, in the 6–14 age group, in order to provide them with an education through the non-formal education centre. The motive is to educate every urban slum child from 6-14 to improve and protect their right to education by mainstreaming them into nearby formal schools. According to an interview with an education worker for slum-deprived children, the role is the most challenging. She underlined—

“To identify or find out who is completely detached from school or has no relation to building schools or education. Pick those (excluded) children and motivate their parents most difficult task. . . request the family to send their child to the centre and set the class timing with the connivance of the child’s parents so that parents can send and the child can attend the centre. Again, a few parents do not send their children, so as education workers, we call or search for children and bring them into the centre to educate them before the classes begin each day.”

Simultaneously, education workers expressed that the NFE centre is a surprise gift for many slum-deprived children. They found that many students had touched books, copies, and pens and read and wrote at nine or ten years of age for the first time in their lives at this supportive education centre. Parents, on the other hand, disregard their children's education. The centre provides combined activity-based basic education for children up to 14 years of age. As the centre is primarily for deprived urban slum children and working children, class times are determined by student and parent cooperation. Again, this is determined after a door-to-door survey and parent opinion, with the approval of Jyoti Kendras, District Mission Coordinator, SSA, regarding their children's availability for the three-hour class per day. The slum's education centre class is in the early evening, from 2 p.m. to 5 p.m., on all working days. The medium of instruction is local language (Bengali), mostly activity and Teaching Learning Materials (TLM) based education. The teachers evaluated them every three months to promote the children to the next class. The total period of training or education is one year, during which they prepare the children for mainstreaming into nearby formal schools, either lower primary or upper primary, depending on the child's eligibility, age, and performance.

In light of its significant contribution, as per the (Times of India, 2014) records, the number of children enrolled in Jyoti Kendras in January 2011, and 2012 was 35,651. Until January 2011, about 13,213 children had been brought to the mainstream through the Jyoti Kendras in Assam. However, due to a lack of adequate teachers and the low pay of education workers (Shiksha Karmis), the lack of timely supply of school kits for children hampered the functioning of NFE centres. Thus, many young children and their parents in urban slums are demotivated in the NFE centres. Furthermore, interviews with centre volunteers about the challenges they face in providing education revealed that the main issues are parent illiteracy

and a lack of awareness of the importance of education. Besides that, an education worker strongly expressed that I had experienced and observed this slum very closely. She commented–

“I used to hear slum parents say that sending our children to a tea stall is preferable rather than sending them to school. Because he could earn money from a tea stall, not at school, some parents argue that if our children can earn Rs 4000-8000 per month from various sources, what is the point of education? Also, some educated people with higher education are earning the same. So, why should we spend so much time and money on education?”

Additionally, education workers also criticised and commented that, in today's society, they are, to some extent, correct. However, the issues of attitudes towards the quality of life, ways of talking, and the importance of education and health remain. Therefore, the education centre has taken the initiative to hold monthly parent-education volunteer meetings to raise awareness of education and its importance, despite parental participation is typically limited. In addition, the centre celebrates observational days, co-curricular activities, and competition programmes and offers chocolate to motivate children to attend school. In addition, one of the most important motivational efforts for children is the Mid Day Meal (MDM), offered previously but currently needs to be provided by the government in non-formal centres. Because MDM is not given, it is difficult to reintegrate urban slum children into the educational system. An education worker from an NFE centre shared experiences,

“Once, on my birthday, I distributed some biscuits and chocolates among the centre children, and suddenly a child came to me and kissed my hand. When I asked what had happened then, the child replied that she was hungry and had not eaten anything since the morning. I asked her if

your mother did not make anything for you in the morning. She said that her mother went to work in the early morning, and my father went with his rickshaw. Then, when I asked all the children in our centre if they had anything eaten in the morning, most said, No, madam.”

Data thus brought to light that MDM is the most significant motivator for disadvantaged slum children. According to an education volunteer, on average, 60–70 per cent of students used to attend NFE centre classes regularly. Educators also stated, “if any pocket food or light food can be provided to those children on the day after class, it may attract more deprived urban slum children to the education centre.” On the other hand, in slums, boys are more irregular in class than girls because, as previously stated, boys are more engaged in earning and playing activities. Girls, on the other hand, are sometimes absent from class for play and other times because it depends on them and their mode. Furthermore, if any child drops out during the one-year training period, in that case, they will be re-enrolled in the course classes the following year, and the children will be mainstreamed into the nearby formal schooling system after training.

Interventions to Promote Slum Children's Education: Education Workers' Perspectives
In the context of slum children's education, education workers of the NFE centre play the role of a facilitator with “dignity to the people,” working with slum dwellers (disadvantaged children, parents, and families) not sympathetically but rather empathetically (Dutta & Dey, 2019; Patil, 2016). Slum children, in general, grow up in a typical environment and are vulnerable to challenges posed by their living circumstances. They, like all children, have a childhood. Therefore, educators and practitioners have become crucial in defining and interpreting the lives of children in and out of school. They can play a dynamic role in repairing deprived children's challenges in urban slums. Education and training



Diagram 2: Intervention in dealing with Slum Children for Education

can be used to intervene in social problems in the field. The experiment consists of the professional application of teaching values and techniques to one or more people to help them gain genuine services, providing counselling and psychotherapy for individuals, families, groups, and communities to be aware of and participate in relevant legislative processes and human rights. Thus, intervention approaches developed specifically from the perspectives of education workers (Shiksha Karmis) can employ multi-disciplinary interventions to improve the education and overall conditions of slum children (see Diagram 2).

Additionally, multi-disciplinary education workers (Shiksha Karmis) can provide direct services like counselling, family therapy, and group work. They can provide counselling to redress their psychological problems, family therapy to address the specific issues that affect slum children, and group work can be used for entertaining and joyful educational purposes. Shiksha Karmis can help to

maintain NFE centre-home-community linkage and, thus, try to prevent behavioural and scholastic problems. They can use their efficacy in the education sector and assist educators with innovative ways of handling children. The approach focuses on the individual child, which helps to care for each child's overall development. Volunteer educators can investigate the causes of school dropouts and provide individualised assistance to children who drop out for specific reasons, attempting to mitigate the situation. They can help these children by linking with government and NGO facilities available for children, school equipment such as books, uniforms, and financial assistance. Many children in India are forced to work for survival; thus, Shiksha Karmis can arrange evening classes for those deprived of an education. Also, arrange classes for slum children's education to provide special education, vocational education, informal education, and life skills so that people can use their knowledge and skills to improve

their living standards. They can conduct non-formal education to bring children up to 14 years of age into the fold of education, even if they never attend formal school. The primary goal of the NFE Centre (under SSA) is to facilitate interaction between schools, communities, teachers, parents, and students to improve learning opportunities and ensure that all children have access to at least their basic social and material needs. Thus, the emphasis is on promoting social justice, gender equality, inclusion, citizen awareness, empowerment, and quality of life advancement.

Concluding Remarks

Data highlighted the challenges faced by slum dwellers due to poverty, lack of awareness, education, and existing government facilities. There are demands for appropriate government action, and NGOs should arrange awareness programmes and implement income-generation activities to improve slum living and help residents fulfil their necessities. More so, to control health issues, regular health check-up camps can be organised in slum schools, and medicine should be provided for free. Studies (Bose, 2016; Khan & Azid, 2011) also found that health awareness about various communicable diseases and the importance of health and hygiene maintenance can also be organised. It has been recorded that low school attendance and irregularities among slum children are due to relative visits and migration. The appropriate authorities and education workers need to take steps regarding the issues. They can suggest migration and relative visits during holidays and school vacations, so their children's education is not jeopardised. Data emphasises that the school environment should be attractive and joyful to inspire the education of slum children. Also, awareness programmes on the importance of education, free and compulsory education, the Right to Education Act of 2009, and other government policies and services must be

organised in slum areas. Also, for parents of slum children, adult literacy programmes should be arranged. GO-NGOs should organise social, cultural, and educational programmes for slum dwellers to motivate them towards education and its values in life. The government should lead the overall development of slum education and provide appropriate facilities for slum communities and a supportive non-formal education centre. Also, providing regular and timely books and other materials, such as uniforms, copies, pens, bags, pocket food, or MDM, helps to attract more deprived slum children and slum dwellers towards the NFE centre for education and learning.

Well, education is important for human development and a nation's progress. Hence, illiteracy and ignorance of disadvantaged groups especially deprived children in urban slums, hamper the development of society. The circumstances demand conscious minds, educators, professionals, education workers, and a multi-disciplinary team to come forward to work with deprived children in urban slums to strengthen children's education. The role and importance of education workers (Shiksha Karmis) in slum educational settings are very substantial. Education workers are trained in dealing with disadvantaged children and founded on values, equity, cultural competence, privacy, knowledge, intervention, empowerment, communication, and crisis management, all of which are essential components of educational and student-friendly education care practices. School irregularities and dropouts are caused by various factors, necessitating an intersectional approach to preventive and control measures. Thus, along with education workers (Shiksha Karmis), slum-deprived children need immediate attention and intervention from multi-professional teams, including counsellors, social workers, child psychiatrists, and health professionals. An integrated approach includes the micro, mezzo, and macro levels of intervention, which can lead to a better hope.

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Understanding the Lives of Children in Institutional Care and its Effects on Development

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Abstract

The detrimental effects of growing up in institutional care are pronounced due to structural adversities faced by children. Research confirms that Child Care Institutions (CCIs) mar children's socio-emotional, cognitive development and acquisition of formative academic skills. An intervention research was undertaken for ensuring holistic development of children in a Delhi based CCI. The present paper is a part of the larger intervention research. This paper aims to provide an insight into the lives of children residing in CCI along with perceptions of significant stakeholders regarding academic challenges faced by institutionalized children. The paper further attempts to examine the effect of developmentally appropriate pedagogical interventions for children in institutions through a pre and post test approach. A sample of 14 children aged 5-10 years were purposively selected as a part of this research. Informal discussions using unstructured interview guides were conducted with 9 stakeholders to understand the concerns and issues related to academic problems encountered by children. The performance gains from pre to post assessment also inform the effectiveness of the holistic approach when compared to a compartmentalized focus on academic performance. The findings are indicative of need for strengthening existing CCIs by providing training and supportive supervision to stakeholders to ensure quality care for children.

Keywords: Children in child care institutions, socio-emotional competence, literacy skills, numeracy skills, contextualized assessment tools

Introduction

Millions of children residing in institutional care across the globe are exposed to adversities right from early childhood with most of them having one biological parent. Due to inescapable circumstances these vulnerable children are at an increased risk and likely to experience abuse, exploitation and neglect, negatively impacting their

development across domains. Recognizing the vulnerability of these children included in categories of especially difficult circumstances is a grave concern for the governments at state, national and international level. These children require appropriate care and protection and in many cases institutional support to ensure their holistic development.

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Child Care Institution (CCIs): Status in India

According to UNICEF approximately 2.7 million children in age group of 0-17 years are living in child care institutions around the globe (UNICEF, 2020). A national level mapping exercise of CCIs conducted in India by Jena Committee in 2016, reported a total of 1.8 lakh children residing in CCIs. In total, 9589 CCIs were mapped. The total population of children in these CCIs was close to 0.37 million. These children were grouped in total of 15 categories. The first three categories of these children were children of single parents (31.81 %), orphan children (11.0 %) and abandoned children (2.0 %). Nonetheless, a child could be categorized in more than one category. Few of other categories of children were surrendered children, sexually abused children, and those who were used in child pornography in the same order (Ministry of Women and Child Development [MWCD], 2018).

India being a signatory to the Convention on Rights of the Child continues to emphasise its commitment through various national policies for children in place. Keeping the best interests of child in mind, the National Policy for Children, 2013 reiterates the efforts of government to provide temporary or permanent provisions close to family care for children who are deprived of parental care through alternate arrangements like adoption, kinship, sponsorship in an attempt to evade institutional care.

The Juvenile Justice (Care & Protection of Children) Act, 2015 categorizes vulnerable children of India in two categories i.e. children in conflict with law (CCL), and children in need of care and protection (CNCP). CCL is defined by Section 2 (13) as a child who is alleged or found to have committed an offence and who has not completed 18 years of age on the date of commission of such offence by Juvenile Justice Board (JJB). Section 2 (14) defines CNCP as orphan and single parent children, abandoned, missing or flee children, street and working

children, children of sex workers, children of substance abusers & prisoners, children of potentially vulnerable families and families at risk, children of socially excluded groups like migrants, families living in extreme poverty, scheduled castes, scheduled tribes and other backward classes, families subjected to or affected by discrimination, minorities, drug abusers, beggars, trafficked or sexually exploited, children of physical and sexual abuse, children infected/affected by HIV/AIDS, children in conflict with law and special children or children with disabilities (NIPCCD n.d; MWCD, n.d., p.11). Care and protection to these children is provided by Integrated Child Protection Scheme (ICPS).

The standards, structures, strategies and designated statutory bodies to meet institutionalized children's needs and rights, through satisfactory consideration, assurance, development and social reintegration are also set out by the Juvenile Justice (Care and Protection) Act 2015 (JJ Act). The fundamental statutory bodies portrayed in the JJ Act 2015 are the JJB for management of children in conflict with law and Child Welfare Committee (CWC) to oversee Children in Need of Care and Protection (CNCP). The JJ Model Rules, 2016 further lays down specific guidelines for providing infrastructure and physical facilities to the children in the CCI.

Furthermore, the JJ Act characterized 'Child Care Institutions' as "Children's home, Open shelter, Observation home, Special home, Place of safety, Specialized adoption agency, and a fit facility to provide care and protection to children in need of such services". In India, CCIs are set up by government, voluntary associations and religious organizations like ashrams, madrasas and missionaries with the objective of mainstreaming CNCP. The JJ Act further emphasises the importance of restoring or placing the child with family and considering the institutionalisation of children as a last resort. If unavoidable, the JJ Act advocates for ensuring the best interests of the child focusing on their right to survival, protection,

education, rehabilitation and re-integration into the society.

The Right to Education (RTE) Act, 2009 clearly mentions all children of age of six to 14 years across nation have right to free and compulsory education. The right clearly speaks that children belonging to vulnerable groups cannot be discriminated and prevented from getting the education on any grounds (Ministry of Human Resource Development [MHRD], 2009). Furthermore, school staff and administration is also liable to provide support and guidance to these vulnerable categories of children. Their teachers and educators must be alert and help these children to cope up from adversities suffered because of previous trauma and abuse experienced. While the RTE makes no mention of children residing in institutions, the directives from CCI management ensure admission of children enrolled in CCI to be admitted in a formal school. The National Education Policy (NEP) 2020 acknowledges children in vulnerable situations and discusses the disparities that continue to exist despite a steady progress observed in recent years. The NEP, 2020 recognizes the importance of Foundational Literacy and Numeracy as a crucial prerequisite to lifelong learning to address the learning crisis among children.

The schemes, policies and Acts discussed above showcase India's commitment to rights-based approach for children thereby making efforts to protect the vulnerable categories with efforts to ensure that quality standards of care and protection are in place. With efforts to provide a conducive and caring environment for children, the government strives to ensure learning, psychosocial and emotional needs of children. Thus the focus is to provide opportunities for holistic development of children in addition to fulfilling their basic necessities like food, clothing and shelter. Ironically these policies do not get implemented in the right spirit. The Three Years Action Agenda (2017 – 2020) of the National Institution of Transforming India recognises the paucity of authentic data

pertaining to children as an effort to design and execute effective policies and schemes (NITI Aayog, 2017). The lack of a warm, stimulating and protective environment in institutional care is negatively associated with the development and learning outcomes of children residing in CCIs.

Status of CCI'S in India

Review of diverse studies in India informs a dismal state of CCI's across India. Results from a study conducted in CCI's located in Kerala inform the low quality of services provided by government and non-government organizations. Several issues like inadequate infrastructure, weak management, poor administration, half-hearted implementation, scarce resources, lack of commitment and meager resource mobilisation result in poor delivery of health, education and rehabilitation services. In addition to this, staff recruited in the CCI's are inadequately qualified or lack training to take care of children's needs (Sreepriya, 2008). Another study conducted by the Ministry of Women and Child Development highlights the vulnerability of young children in the age group of 5-12 years as the probability of them experiencing child abuse is much more when compared to children in older categories (MWCD, 2007). Another study carried out in Tamil Nadu looked into the factors associated with care of children in CCI. Various dimensions of quality of life namely physical, psychological, social relationship and environment were assessed and found to be moderately satisfactory, emphasising the need for improvement in CCI's (Khumar & Rangasami, 2020). Poor rehabilitation measures and inadequate facilities were seen in another review of literature of CCI's. The review informs the institutionalisation of children is prevalent because the families are not able to take care of their children due to economic backwardness and not because the children are orphans. The study further highlights the need for poverty alleviation programmes and income generation activities to address the grave issue of poverty (Bandi, 2021).

Evidence from Interventions

Evidence informs customised long-term intervention ranging from six-nine months may reduce the impact of adversities of responsive care giving on children (National Scientific Council on the Developing Child, 2012). Beside this, providing safety and protection to children in every school and ensuring that all academic institutions have a child protection policy in place should be mandatory. This is crucial because after a certain age children spend more time at school. In many instances it is considered that children are closer to their teachers/tutors and peer groups (NIPCCD n.d.). Further, benefits of early intervention are far reached and hold true for holistic development including academic domain. The earlier the children are engaged in activities to strengthen their foundational skills, better are the benefits (Marathe, n.d.; Hough & Kaczmarek, 2011). As mentioned earlier, contextualised interventions work best. For instance, to improve language skills of institutionalised children, recognising children's present semantic skills and then engaging them in identification and associative activities that are child directed, interactive and engaging is essential (Moreno-Manso, García-Baamonde, Blázquez-Alonso, & Pozueco-Romero, 2015).

In addition to early and customised interventions, appropriate pedagogical practices need to be in place to ensure successful learning. Regular, customised trainings and ongoing mentoring and support need to be provided to caregivers and teachers, to equip them with practical skills to facilitate and encourage children's learning (Bettmann, Mortensen, Akuoko, & Tatum, 2017; Wright et al, 2014). These trainings ought to encompass components like development and academic needs of children, importance of child initiated activities. These skills and knowledge are effective in getting children actively involved, staying engaged and thus enhancing performance outcomes (Bredenkamp, 2011; Wright et

al, 2014). Simultaneously, supportive and mental health services need to be directed for caregivers too (Lassi, Mahmud, Syed, & Janjua, 2011). Organising rejuvenation sessions, refresher trainings and supportive supervision for all stakeholders will be meaningful.

In India, little is known about social-emotional, literacy and numeracy needs of institutionalised children. The gap further widens because of limited availability of standardised tools for vulnerable categories. It further is amplified by lack of formal training among staff for effective test administration (National Research Council, 2001). Research informs that the existing standardised tools for understanding the development of vulnerable categories of children are biased and thus flawed (National Research Council, 2008, p. 233-234). Thus it is an onus on the researchers to conduct assessments of children carefully and appropriately using tools that help resolving educational problems, rather than creating them. While evidence across time and studies confirms the negative impact of institutionalisation on children's development, the lack of consensus for standardised measures continues to reiterate the need for appropriate measures in future research.

Objectives of Paper

The objectives of the present paper were to:

- i. Provide an insight into the lives of children residing in CCI.
- ii. Explore perceptions of significant stakeholders regarding academic challenges faced by children residing in CCI.
- iii. Examine the effect of developmentally appropriate pedagogical interventions for literacy, numeracy skills and social-emotional competence of children through a pre and post test approach.

Methodology

As mentioned earlier this paper reports data from a broader intervention study designed to work with children residing in a CCI. A participative consultative approach was employed to understand the concerns of significant stakeholders and existing skills of children that facilitated developing meaningful and appropriate interventions.

Research Design: With the objective to strengthen the literacy, numeracy and social skills of children in CCI, a mixed method approach utilising qualitative and quantitative techniques was designed to collect data from CCI as a part of pre and post intervention research.

Sample and Methods of Data Collection: The methodology included selection of a purposive sample of 14 children in the age range of 5-10 years, recruited from the CCI.

Qualitative Tools: The engagement with staff members and children at CCI was for nearly three months, inclusive of observations and informal interactions with children to understand and highlight nuances of existing practices. Participatory and non-participatory observations lasting for 3 to 4 hours were conducted in village cottage homes (kuttis) of children. The anecdotal records from observations included descriptive and reflective field notes documented to gain an insight to the lives of children residing in kuttis. The purpose of informal interactions with children was to form rapport with children and hear their voices. Establishing rapport with children over a period of 3 months was beneficial in administering assessments and conducting effective interventions with active participation of children. Four researchers conducted joint visits for data collection to ensure reliability.

Informal interviews using interview guides and a focus group discussion (FGD) were conducted with significant stakeholders (caregivers) in CCI. The stakeholders included a Superintendent, Child Welfare Officer (CWO), Housemothers, a Housefather, Tutors

and a volunteer to understand the concerns and issues related to academic problems encountered by children. Further the interviews and FGD ascertained expectations of stakeholders at CCI to design contextual assessments and meaningful interventions.

Quantitative Tools: Customised tools were developed to combat the paucity of standardised contextual tools for vulnerable children in the age group of 5-10 years. To mitigate this issue the team referred to national level documents and existing standardized tools for children when developing assessment tools. Subsequent to development of contextual tools, the researchers were provided robust training before their administration with children. Detailed instructions along with a document for administration and scoring of the tools was developed which provided a ready reference for the team. It was ensured that tools were administered utilising a child friendly approach. Administration of tool for each child was in accordance with his/her pace. All the tools were pilot tested to ensure their appropriateness and reliability. While a pilot assessment and expert consultation were conducted to ensure the accuracy of tools they could not be standardised due to limited time and small sample size. The pilot also provided opportunities for familiarising with administration of tools. The data from assessments of children provided an insight to existing developmental skills and gaps among children which further facilitated in planning meaningful interventions.

Findings from the Study

The observations, informal interactions with children and interviews with various stakeholders provided a nuanced understanding of lives of children residing in CCI, described in detail in this section. These findings were helpful in designing a comprehensive intervention with a play way and activity based approach for children and its effect was assessed. The interventions were comprehensive in nature with a focus

to foster children's literacy, numeracy and socio-emotional skills, as requested by CCI.

Life in CCI

The findings from the research informed that functioning of CCI was aligned with the principle of family based care with an attempt to provide a feel of familial environment. Within the premises, four independent Kuttis (brick and mortar structures) were housed adjacently. CCI's physical structure and layout was child friendly. Each Kutti had provision of two bed rooms, a living area, a kitchen, a hand washing area (where three washbasins were installed), bathrooms and a large sized multipurpose room for relaxation (where children could study, play indoor games, watch television under supervision of the housemother). There was provision of space outside each Kutti for children to play individually and in groups. Each Kutti was easily accessible and children from one Kutti could visit, play and interact with children from other Kuttis during daytime and evenings. Each Kutti housed 8 - 10 children and a housemother. The housemothers were the primary caregivers to children and lived with them 24/7. Each housemother was responsible for basic needs namely food with adequate nutrition, care, affection, safety and security of children under her care.

Lives of Caregivers of CCI

The visits to the CCI also revealed the periodic changes in the families of children. Within short durations of visits during the research it was observed that new children were placed in the family and a couple of former children had moved out. During an interview a housemother informed, *"the movement of children in and out of CCI is a dynamic process. Whenever any child is reported by an organization or reaches police station they are usually sent to nearest CCI. Sometimes children who are below 8 years of age are identified for adoption. They leave CCI or are shifted to adoption home, if they fall in age range of adoption. For instance, Sapna*

(5 years) came to CCI three years ago. She has recently been identified for adoption. Hence she will move to adoption home and after few days once the formalities for adoption are completed she will start residing with her adopted family."

The interviews with significant stakeholders revealed that there were no organised mechanisms to provide support and training to stakeholders to cater to children's holistic needs, including emotional needs. Interactions with housemothers revealed that their own families were financially dependent on them, while some reported that they were not in contact with their families. One house mother shared, *"I got separated from my husband at a young age. No one from my family came forward to support me. The struggle for existence for even basic amenities has been challenging ever since. I have a son and go out once in a month to meet him. I am worried how we will manage our lives after I retire from CCI."*

In-depth conversations with housemothers further informed that they themselves experienced emotional scars and instability as few of them were widows and had no support systems. Data from interviews and observations highlighted the limited skills among housemothers to handle children's emotional needs, particularly, those with difficult behaviors. They were not able to provide a positive and caring environment of love and affection that was required for younger children.

Children's Routine: Packaged with Academic Activities

Discussions with stakeholders revealed that children's daily schedule was packaged with academic activities. The daily routine commenced with their waking up, having breakfast and getting ready to go to school. They returned in the afternoon, freshened up, changed their clothes and had lunch. From 3-5 pm they had tuitions scheduled in CCI itself (two female tutors visited CCI on a regular basis). In between, volunteers visited

CCI just to teach children. These volunteers were students pursuing graduation in various colleges in Delhi and volunteered for the activity as part of internship. Furthermore, the academic activities organised for children were not age appropriate with negligible use of teaching learning materials. The educators used a formal approach to teaching by not considering the children's past, age and needs. Consequently, they failed to create an interest among children.

Subsequently, in the evenings, children were engaged in story reading activities. Occasionally, children were engaged in recreational activities such as music and dance lessons. Thus the discussions revealed that four-five stakeholders were involved in teaching and interacting with the children. However, these interactions were limited to academics only. Children did not get sufficient time for physical and other activities.

The superintendent further expressed her apprehension regarding the engagement with diverse stakeholders. She felt it was quite likely that the different teaching strategies utilised by different stakeholders might have created a dissonance among the children. Consequently, these brief interactions of the children in CCI with many stakeholders and over-engagement with academic activities could be challenging and distressing. Frequent changes of stakeholders interacting with the children might hinder the formation of close socio-emotional bonds and consequently impact their academics and other developmental domains.

Stakeholders' Views about Academic Needs of Children

Stakeholders, viz, the Superintendent, CWO, and tutors put forth that children were behind their grade expectations in terms of reading, writing and arithmetic. They informed that some children could not even read. Further they expressed their distress over children's lack of understanding about importance of education and disinterest

or lack of inclination towards academics. Nonetheless, as most of the children were previously on streets, the stakeholders did share the children's strengths as being 'street smart'. One of the stakeholders surmised that being 'street smart' could be because of their exposure to life on the street before entering institutional care. Similarly, another stakeholder revealed that children were very much aware about their rights in the CCI, for instance, their right to get food, and their right to different belongings. The stakeholders were of the view that the basic educational competencies would help shape the personalities of the children, cultivate their identity and build their knowledge and skills to fend for themselves, when they venture out of CCI. Consequently, all stakeholders emphasised on rendering educational interventions to children during two months summer vacation.

Aligning with the above discussion, the research team decided to plan a need based intervention for the children. Contextualised and customised tools developed to assess the current performance, strengths and challenges of children facilitated appropriate planning and meaningful educational interventions for effective individualised instruction for each child. The process of construction of tools is discussed in the next section.

Development of Contextual Tools for Assessing Developmental Skills of Children

Desk review was undertaken to explore and identify tools to assess the literacy and numeracy and social skills of disadvantaged children (aged 5-10 years) in Indian context. Given the limited options available for standardized, contextual and age appropriate tools, the team decided to adapt and design tools to assess the literacy and numeracy skills of children in CCI.

The literacy and numeracy tools were developed based on the National Council of Educational Research and Training's School

Readiness Indicators (NCERT, 2017), and document titled Learning Outcomes at the Elementary Stage (NCERT, 2017a). *The School Readiness Instrument* by World Bank was also referred (The World Bank, n.d.). These national level documents provided direction on how the tools would be constructed and what indicators would be used. The items within the tools were contextualised to the children's environment and were placed in increasing order of complexity. Efforts were made to incorporate pictures from the

children's environment. This would facilitate children to identify with the pictures and construct meaningful sentences.

The checklist for assessment of social skills was developed in reference with documents titled *Accelerating Learning* (Development Assessment Measurement I was consulted) (Mobile Crèches, n.d.) and *A Guide for Nursery School Teachers* (NCERT, 1969). The checklist Performa was conducted with the house mothers of Village Cottage Home.

The tools developed comprised of:

Figure 1.1: Tools and its Components

Literacy Assessment	Numeracy Assessment	Checklist for Assessment of Social Skills
<ul style="list-style-type: none"> • Listening skill • Speaking skill • Sentence formation skill • Reading readiness and comprehension skill • Creative writing 	<ul style="list-style-type: none"> • Identification and classification (colors and shapes) • Seriation • Pattern completion • Sequential thinking • Concept: more and less • Match objects with numbers • Number repetition • Addition, subtraction multiplication and division (concrete objects and oral problem statement) • Number reading • Concept of time • Missing number 	<ul style="list-style-type: none"> • Self-management skills • Self-awareness skills • Social awareness skills • Responsible decision making skills • Relationships skills • Negative skills

Subsequently, the researchers were provided robust training before administration of tools. Besides, detailed instructions along with a document for administration and scoring of the tools was developed and provided as a ready reference for the team. It was ensured that tools were administered utilising a child friendly approach. Administration of tool for each child was in accordance with his/her pace. All the tools were pilot tested to ensure their appropriateness and reliability. Content validity was ensured through several discussion sessions within the CECDR team.

Interventions

The information from pre-assessments of children was utilised to plan meaningful interventions for children. The interventions for children were introduced through appropriate pedagogical practices focused on creating activity based, child-centered and play-based learning experiences and further aligning them with learning outcomes prescribed by NCERT. Energisers, puppets, storytelling, story making, video stories with subtitles and comprehension activities, quiz,

extempore, antakshari were implemented through individual activities, pair activities, small group activities, big group activities and whole class activities to nurture cognitive, language and socio-emotional development in children.

The contextualised pedagogical approach ensured active participation of children, a balance between child initiated and adult directed activities, flexibility and an inclusive approach in an attempt to address individualised learning plans for all children. Small and large group activities encouraged children to work in groups collaboratively and focus on their expression in front of all children. Regular interactions and sessions with research team to boost up self esteem ensured that children not only improved in self expressions but started taking initiatives in class resulting in improved academic performance.

Pre and Post Assessments

Data collected in the process of pre and post assessment were analysed and interpreted to develop preliminary findings, conclusions, and recommendations.

The mean, standard deviation and t values for comparison of pre and post assessment of children on literacy are presented in Table 1.1 below. The results demonstrated statistically significant improvement in the basic Hindi literacy skills among children of age 7 years. The post-test scores of these children were significantly higher in comparison to pre-test scores ($t=5.97$, $p<.01$). The results informed an enhancement in letter recognition, letter reading, oral sentence formulation, and reading skills among these children. However, no significant improvements were noticed in literacy skills in children aged five and six years.

Table 1.1: Descriptive analysis of the pre and post literacy assessment

Test Category	Group	n	Mean	Std. Deviation	Mean Difference	t-value	df	p-value	r
Age 5 test	Literacy Pre-Test	3	9	4.58	4.00	1.92	2	0.195	0.619
	Literacy Post-Test	3	13	2.65					
Age 6 test	Literacy Pre-Test	3	19	0.00	0.0	0	0	Nil	Nil
	Literacy Post-Test	3	19	0.00					
Age 7 test	Literacy Pre-Test	9	18.44	2.2	2.78	5.97**	8	0.001	0.873
	Literacy Post-Test	9	21.22	1.09					

Post interventions, feedback from CCI Superintendent for literacy skills was reassuring: *“The most apparent change in the children is that they have developed an interest in reading. Few days back a child was able to read clearly lines from a newspaper article. Moreover, they have developed an interest and curiosity towards learning.”*

Table 1.2 shows the mean, standard deviation and t values for comparison of pre and post assessment (Mean difference

= 2) of children on numeracy. In relation to children of age 5 and 6 years, the pre and post assessment results indicated that there was an increase in the performance after interventions. However, this increase was statistically insignificant due to small sample size in these two age groups (two children aged 5 years and five children aged 6 years). The performance of children of age 7 years did improve but this improvement was insignificant due to chance factor.

Table 1.2: Descriptive analysis of the pre- and post-numeracy assessment

Test Category	Group	n	Mean	Std. Deviation	Mean Difference	t-value	df	p-value	r
Age 5 test	Numeracy Pre-Test	2	9.50	7.77	-2.00	2	1	0.295	0.99
	Numeracy Post-test	2	11.50	9.19					
Age 6 test	Numeracy Pre-Test	5	19.0	10.12	-2.80	0.78	4	0.48	0.97
	Numeracy Post-test	5	21.80	2.16					
Age 7 test	Numeracy Pre-Test	7	13.14	2.79	-0.28	0.33	6	0.752	0.58
	Numeracy Post-test	7	13.43	1.90					

Similar positive results were observed in the area of socio-emotional development that are presented in the case study discussed below.

Case study: Fostering Self Esteem

Meena, a 5-year-old girl was observed to be poor in self-expression. During early visits to CCI, it was observed that Meena would not take initiative in group work, be quiet and reserved in expressing her emotions. Similar observations were shared during interactions with the house mother of CCI. She informed that Meena would be sitting alone most of the times, did not participate in activities and made no efforts to talk to her or the other children. As a result, the other children started labeling her to be quiet and sad. In their efforts to encourage Meena talk, the stakeholders from CCI in their normal conversation would unintentionally use a lot of labels such as, “*Meena tum toh kabhi bhi smile hi nahi karti ho, tum toh har samay udaas hi rehti ho*” etc. (Translation: *Meena you never smile, you are always sad*).

Regular and consistent interventions were beneficial for Meena as she started expressing herself freely in a matter of one month. This was a moment of celebration for the intervention team. Sessions were further planned to create a positive environment, free of labels to promote a conducive environment for overall development of children.

Conclusions

The findings from the study highlight the perseverance of the government to relocate the children residing in CCI’s in a family

environment. Simultaneously create a family-like environment in CCI’s, if children residing in institutions do not get placed in families. Disappointingly, observations and discussions with stakeholders informed relatively large group sizes of eight to ten children residing in one kutti. The burden of taking care of a large group of children prevented caregivers (housemothers) to form close attachments with children, minimised opportunities of quality interactions, and offered limited opportunities for responsive and warm caregiver-child engagements. Frequent changes in the family prevented close-knit relations among children and were detrimental, having a far-reaching negative impact on all encompassing development of children.

Observations of children’s daily routine and discussions with significant stakeholders emphasised their opinion to focus on academic achievements of children and it was a major concern for all stakeholders. Though the expectations and aspirations of stakeholders have a significant impact on children’s outcomes, it is important to draw attention to over-emphasis on academics that created hindrances in holistic development of children. Observations from the research further revealed that the stakeholders, specifically the housemothers and housefather lacked the skills to attend to the children in a proactive and responsive way. Apparently, discussions with housemothers informed

that most of them had a disturbed past and distressed family history. Acknowledging and addressing their personal and emotional upheavals adequately, providing them opportunities for training would facilitate a responsive approach in taking care of the children.

Lastly, developing meaningful interventions that are need-based for children in CCI are important. A major challenge experienced by the team was identification of contextually relevant tools to understand the needs of children in CCI. Research informs that the existing standardised tools for understanding the development of vulnerable categories of children are biased and thus flawed (National Research Council, 2008, p. 233-234). The present research highlighted the need for child-friendly standardised assessment tools for vulnerable children.

Recommendations

The findings from the study highlighted a few recommendations as a way forward to improve the quality of lives of children and their stakeholders residing in CCI. The over emphasis of stakeholders on academics requires intentional efforts to consider a shift to organize a few opportunities from structured to free play. While addressing

children's academic needs are indeed important, it needs to be complemented with children's engagement in extra-curricular activities and unstructured activities of their choice. At this point it is important to reiterate that children need to be engaged in activities that are self-initiated. Additionally, there is a need to focus on holistic development of children which can be achieved only if there continues to be progress in all domains simultaneously.

Supportive and mental health services need to be directed for caregivers too. Organising rejuvenation sessions, refresher trainings and supportive supervision for all stakeholders will be meaningful. These trainings should be continuous and ought to encompass components informing stakeholders about development and academic needs of children to equip them with practical skills to facilitate and encourage children's learning (Bettmann, Mortensen, Akuoko, & Tatum, 2017).

Investments in development of child-friendly, standardised assessment tools for the vulnerable category of children will promote effective assessment practices. These will be valuable in informing the larger academia, policymakers and government about the status, needs and progress of vulnerable children.

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In-service Training Programmes Related to Inclusive Education: Perspectives of Elementary School Teachers

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Abstract

Expertise of teachers is considered to be a very important factor in implementing their academic inputs in the educational system and motivating students to become useful members of the society. In-service training programmes, especially, in inclusive education, support the teachers handling children with special needs and to overcome the challenges in their field. The purpose of this study is to investigate the reflections of elementary school teachers on designing and implementation of the in-service training programmes related to inclusive education. The required data were collected from the 305 elementary school teachers randomly selected from the state of Kerala in India. The main finding of the study reveals that majority of elementary school teachers viewed that the in-service training programmes related to inclusive education were at a satisfactory level.

Key Words: *Elementary education, inclusive education, in-service programmes, perception, and school teachers*

Introduction

With reference to Convention on the Rights of the Child (UN, 1989) and the Salamanca Statement (UNESCO, 1994), many European countries have worked out the policies and practices to promote inclusive education (Arcidiacono and Baucal, 2020). Mainstreaming the children with special needs into regular schools is the motto of implementing the inclusive education policy. Due to the unclear and diverse understanding of researchers, policy makers, and teacher educators on inclusive education, many countries are facing several challenges

in implementation of inclusive education policies (Van Mieghem et al., 2018; Kivirand et al., 2020). The concept of inclusion for all means that all children irrespective of their diverse needs should have the opportunity to learn together (Leijen, et al., 2021). At the school level, inclusive education refers to a learning process that includes all types of learners, regardless of their abilities, gender, or ethnic background, and helps them grow into dignified individuals with a greater understanding of one another's differences, which aids them in subsequent successful partnerships in societal contributions (UNESCO, 1994; Sreeja, 2016; Felder, 2019).

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It aims to ensure that students with diverse needs and preferences such as the students with disabilities can have equal opportunities in accessing learning resources, services and experiences in general (Florian & Linklater, 2010).

Inclusive education is not only the alternative measures for children with special needs but also a scientific well planned strategy for their overall development (Sanjeev & Kumar, 2007). Inclusive education must go far beyond mere physical placement of students with disabilities in general classrooms and should engross schools meeting the needs of all their students within common, but flexible environment and activities (Skrtic, 1991). There is need for serious planning and efforts in order to achieve the goals of inclusivity and leadership roles will have to change in the existing school system in terms of physical factors, curriculum aspects, teaching expectations and styles (Singh & Agarwal, 2015). In India, the government has initiated many promotional activities in the line of inclusive education in the past four decades and yet there is a lack of supportive leadership at the school level. Many administrators especially those at privately managed schools, succumb to academic and performance pressures and neglect the education of disadvantaged groups, including those with disabilities (Sharma & Das, 2015). Further the school teachers face challenges in their classroom setting in accommodating the children with special needs. There is a need to equip the general classroom teachers to handle the inclusive classroom settings since the inclusive education demands that a teacher be flexible, creative, innovative, and well-trained (Mohanty, 2008). Hence, empowering the teachers through in-service training programmes with more practical exposure, booklets about disabilities and handbooks for teachers help them to have a positive attitude towards handling students with diverse abilities (Subedi, 2015; Prabavathy, 2016; Forlin & Sin, 2017).

In-service training is a practice whereby school teachers enhance their teaching skills and make use of it in solving their professional challenges. It is every individual's belief that they have the skills and knowledge to improve a situation in which they operate (Maeroff 1988; Short et al. 1994). In-service training has been studied in relation to job satisfaction (Bogler & Nir, 2012; Rinehart & Short, 1993), participation in decision-making (Gruber & Trickett, 1987; White, 1992), commitment (Wu & Short, 1996), conflict (Johnson & Short, 1998), instructional practice and student academic achievements (Lyons et al., 2013). A research report of Sweetland & Hoy, (2000), highlighted that in-service training is more powerful when it is focused on intensifying teacher professionalism and empowering teachers has its greatest influence on student accomplishment when the prominence is on the core technology of teaching and learning in schools. So in-service training is apparent as a vital aspect that affects school efficacy (Wall & Rinehart, 1998; Ahrari, et al., 2021). With this background, this study was conducted to elicit the perceptions of elementary school teachers on the usefulness of in-service training programmes related to inclusive education with the following objectives.

Objectives of the Study

- To analyze the perspectives of elementary school teachers on usefulness of in-service training programmes related to inclusive education in Kerala, a State of India;
- To compare the perceptions of elementary school teachers on different components of in-service training programmes related to inclusive education with reference to school levels: lower and upper primary; school management: government and government aided; and gender: male and female; and
- To study the inter relationship between the perceptions of elementary school

teachers in different components of teacher empowerment programmes related to inclusive education.

Methodology of Research

Both qualitative and quantitative designs were used to explore the viewpoints of elementary school teachers on in-service training programmes related to inclusive education. For this purpose, the researchers used the survey method to collect the needed data from teachers of Kottayam, Pathinamthitta and Idukki districts of Kerala State in India.

The sample of 305 elementary school teachers was selected randomly from 35 primary school and 30 upper primary schools. Among them, 149 (48.85%) were primary school teachers and 156 (51.15%) were upper primary school teachers. Further, there were 139 (45.57%) teachers from government schools; 166 (54.43%) were from private aided schools; and 155 (50.82%) were male teachers and 150 (49.18%) female teachers.

To collect the required data, the researchers used the Teacher Perception Scale on inclusive education in-service training programmes at elementary school level. The scale has been developed by the researchers in Malayalam and English language version. It is a Likert Scale constructed with all standardization procedures and consists of five subscales, namely, training pre-arrangement, training content relevance, training strategy approach, training programme follow-up, and training usefulness to teachers. Each subscale includes 10 statements, and all statement items are set against a five-point rating from 1 (strongly disagree) to 5 (strongly agree). Each subscale has a maximum score of 50, and the teacher perception scores in the composite scale (max. score 250) calculated from all 50 items represent their level of

perception on inclusive education in-service training programmes. The validation of the study tool was carried out by using face validity and the reliability of the tool was found by using the test and retest method. The correlation co-efficient values found from reliability test are 0.81 for composite scale; 0.78 for the training pre-arrangement; 0.73 for the training content relevancy; 0.73 for the training strategy approach; 0.75 for the training programme follow-up; and 0.77 for the training usefulness to teachers respectively. These reliability scores indicate that the tool with its five subscales is highly reliable for use in research studies.

Results of Research

Based on the teachers' perception scores, the perceptions on inclusive education in-service training programmes were classified into three categories — poor in-service training programmes; satisfactory in-service training programmes and good in-service training programmes. If the perception scores were above one standard deviation from the mean score (Mean + SD), then it is assumed that teachers' observation on in-service training programmes of inclusive education is at a *Good* level. Likewise, if the perception scores were below one standard deviation from the mean score (Mean - SD), then it is assumed that teachers' observation on in-service training programmes of inclusive education is at a *Poor* level. The scores between Mean + SD and Mean - SD were considered that teachers' observation on in-service training programmes of inclusive education is at a *Satisfactory* level. The obtained mean and standard deviation scores of sample in teacher perception scale are 138.36 and 17.57 respectively. The following table describes the perception levels of sample on in-service training programmes conducted in the state of Kerala in India, which were related to inclusive education.

Table 1**Perception levels of Elementary School Teachers on In-service Training Programmes related to Inclusive Education**

Perception on in-service training	Poor level (Mean-SD)	Satisfactory level (middle range)	Good level (Mean + SD)
N	39	220	46
%	12.79	72.13	15.08

Among the selected 305 elementary school teachers, 15.08 per cent of the positively opined and they agreed that the in-service training programmes related to inclusive education conducted were *Good*; 12.79 per cent of them had a negative opinion and viewed that the in-service training

programmes were *Poor*, and 72.13 per cent thought that in-service training programmes related to inclusive education conducted in the state were at *Satisfactory* level. The following table shows the mean scores of the elementary school teachers in five subscales of Teacher Perception Scale.

Table 2**Mean Scores of Elementary School Teachers in Teacher Perception Scale**

S.No.	Sub-Scales	N	Mean	Strong/ Weak	Reason
1	Training Pre-Arrangement (TPA)	305	27.77	Strong	> GM
2	Training Content Relevancy (TCR)	305	26.99	Weak	< GM
3	Training Strategy Approach (TSA)	305	30.11	Strong	> GM
4	Training Programme – Follow up (TPF)	305	27.46	Weak	< GM
5	Training Usefulness to Teachers (TUT)	305	26.04	Weak	< GM
Grand Mean - GM (Mean Score of Means)		305	27.67		

The above data shows that

- The Grand mean score of the elementary school teachers in all five sub-scales of Teacher Perception Scale on in-service training programme of inclusive education is 27.67.
- The mean score of elementary school teachers in teacher perception sub-scale: Training Pre-arrangement (TPA) is 27.77

and it is greater than the grand mean score of sub-scales. This indicates that teachers' observation on the Training Pre-arrangement in in-service training programme of inclusive education is *Strong*.

- The mean score of elementary school teachers in teacher perception sub-scale: Training Content Relevancy (TCR) is

26.99 and it is less than the grand mean score of sub-scales. This indicates that teachers' observation on the Training Content Relevancy in in-service training programme of inclusive education is *Weak*.

- The mean score of elementary school teachers in teacher perception sub-scale: Training Strategy Approach (TSA) is 30.11 and it is greater than the grand mean score of sub-scales. This indicates that teachers' observation on the Training Strategy Approach in in-service training programme of inclusive education is *Strong*.
- The mean score of elementary school teachers in teacher perception sub-scale: Training Programme Follow-up (TPF) is 27.46 and it is less than the grand mean score of sub-scales. This indicates that teachers' observation on the Training Programme Follow-up in in-service training programme of inclusive education is *Weak*.
- The mean score of elementary school teachers in teacher perception sub-scale: Training Usefulness to Teachers (TUT) is 26.04 and it is less than the grand mean score of sub-scales. This indicates that teachers' observation on the Training Usefulness to Teachers in in-service training programme of inclusive education is *Weak*.

The following table shows the comparison of mean scores of the lower primary and upper primary school teachers in general and also in sub-scales of Teacher Perception Scale. The above data shows the comparative results of teacher perception scores of primary and upper primary school teachers with respect to their mean and standard deviation scores both in total scale and also in sub-scales. The mean scores of the primary and upper primary school teachers in total teacher perception scale on in-service training programme of inclusive education are 134.91 and 141.66 which indicates that the teachers at upper primary level observed that the in-service training programme of inclusive education better than that of lower primary level teachers. Also, the calculated 't' value ($=3.42 > 1.96$) and p-value ($0.00 < 0.05$) indicate that there is a significant difference between the mean scores of lower and upper primary school teachers in teacher perception scale. Hence it is concluded that *there is a significant difference between the perceptions of lower primary and upper primary school teachers on in-service training programme of inclusive education*. Further, the table results indicate that there is a significant difference between the mean scores of lower and upper primary school teachers in all sub-scales excluding Training

Table 3

Mean and Standard Deviation Scores of Lower and Upper Primary School Teachers in Teacher Perception Scale

School		TPA	TCR	TSA	TPF	TUT	In Total
Lower Primary	N	149	149	149	149	149	149
	Mean	27.59	25.43	28.68	26.58	26.62	134.91
	SD	4.88	4.66	6.10	6.81	6.621	15.29
Upper Primary	N	156	156	156	156	156	156
	Mean	27.94	28.47	31.48	28.29	25.47	141.66
	SD	4.92	4.41	7.89	7.07	2.76	18.97
t' value		0.63	5.85	3.48	2.51	2.07	3.43
p-value		0.53	0.00	0.00	0.03	0.04	0.00

Pre-Arrangement (TPA) since their calculated 't' value of mean scores are greater than the table 't' value and p-values are less than 0.05. The interaction analysis of elementary school

teachers' perception scores in composite scale with respect to gender and school management are analysed by applying the *Two Way ANOVA*.

Table 4

Analysis of Variance of Elementary School Teachers' Perception Scores in Composite Scale - Two Way ANOVA

Source	Sum of Squares	df	Mean Square	F	p-value
Gender (A)	5975.58	1	5975.58	25.29	0.00
Management (B)	831.95	1	831.95	3.52	0.06
A x B	14110.55	1	14110.55	59.73	0.00
Within	71109.02	301	236.24		
Total	93844.33	304			

* Significant at 0.05 level

Table 4, A - represents *Gender* and B represents the *School Management* such as government and government-aided. The table data results show that the gender ($F = 25.29$; $p = 0.00$), and nature of school ($F = 3.52$; $p = 0.06$) and it means that there is an impact of gender on in-service training programme of inclusive education since the corresponding p-values are greater than 0.05; but there is no impact of nature of school on the perceptions of elementary school teachers.

Discussion

The main finding of study reveals that majority of elementary school teachers viewed the in-service training programmes related to inclusive education were at *satisfactory* level and it coincides with the findings of Parsad, Lewis and Farris (2008); and Kivirand et al., (2021); but contradicts with the study result of Sumaiya Khanam Chowdhury and Mirza Md. Hasan (2013). The selected elementary school teachers viewed that the training content relevancy, training follow-up activity and training usefulness components of in-service training programmes related to inclusive education were weak; but training pre-arrangement and

training strategy approach components were strong. Also, the study results explored that there was a significant difference between the perceptions of teachers from primary and upper primary level schools whereas there was no significant difference between the perceptions of teachers with reference to their school management on the perception of teachers on inclusive education in-service training program. Further, the study result on gender analysis revealed that there was a gender impact on perception of teachers on in-service training programmes and it is contradictory to the research findings of Loughran (2007) and Corey Ray Gardenhour (2008) who found that there was no statistically significant difference between male and female teachers and gender did not play a part in the relevance.

Conclusion

Every individual in the universe is unique and have to enhance the learning competences in educational system for the beneficial of survival in the society. Educational access and opportunities alone fulfil the needs for the survival throughout the life span of the individuals. Education is a platform for the individuals to realize their innate

potentials and channelize them properly. Teachers and school systems should ensure the access, equity and quality in education. For empowering the student learners, the teachers should empower themselves in their teaching profession. The teachers should be equipped in handling all types of student learners in the classroom environment. In all classroom environments, we could see the students with different abilities and challenges. Inclusion of special needy children in the regular school system is the need of the hour due to the implementation of Right of Children to Free and Compulsory Act 2009 in the country. Handling the students with special needs to the teachers,

especially, at elementary schools is a great challenge. Adequate knowledge, exposures and experiences are needed by the teachers for managing and implementing academic tasks among the students in inclusive schools. Hence, to make the teachers at elementary level empowered in handling the students at inclusive schools, they should be provided enough knowledge in handling students in an inclusive education system and accordingly the administrators of teacher education departments must plan the training programmes properly with field experts and implement them with the support of experienced resource persons.

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Exploring Pre-Service Teachers' Understanding about Scientific Inquiry

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Abstract

The aim of this study is to examine the pre-service teachers' (PSTs) views about scientific inquiry. A descriptive survey is conducted for this purpose using open ended 'Views About Scientific Inquiry (VASI) Questionnaire' developed by Lederman et al (2014). The sample constitutes 107 Pre-service teachers of undergraduate four-year teacher education program. Data was analysed using qualitative research methods by coding and categorising responses into 'informed', 'mixed' and 'naïve' categories. It is found that a majority of PSTs have mixed and naïve views in most of the aspects of scientific inquiry. A majority of PSTs have 'informed view' in two aspects of SI namely "all scientific research begins with a question, but does not necessarily need to be tested with hypothesis" and "Inquiry procedures are guided by the question asked". However, they have naïve and mixed understanding in four aspects— 'There is no single scientific method', 'Inquiry procedures can influence results', 'Scientists performing same investigation get same results' and 'Scientific data and evidence are not the same'. The study has implications for a pedagogical discourse for promoting scientific inquiry in pre-service teacher education program.

Key word: Scientific Inquiry

Introduction

One of the major aims of science education is development and promotion of scientific literacy. Scientific literacy encompasses the contemporary ideas of science, science-society interface, spirit of scientific inquiry and it requires an understanding of nature and processes of science so that citizens can make informed decisions about scientific issues. Scientifically literate people can make informed decisions about socio scientific issues through their understanding of scientific inquiry and scientific processes (Lederman, Lederman et al 2014).

Two important facets which contribute to scientific literacy are Nature of Science (NOS) and Nature of Scientific Inquiry (NOSI). NOS is "epistemological underpinnings of the activities of science" and NOSI is "the process by which scientific knowledge is developed" (Lederman 2004). Scientific inquiry entails using a variety of science process skills, creativity, and critical thinking to develop scientific knowledge (Lederman et al 2014). Though SI broadly refers to "diverse ways in which scientists study the natural world and propose explanations based on evidence derived from their work" (NRC 1996, 2000) it is not limited to the scientists' work or

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the manner in which scientific knowledge is constructed. Scientific inquiry can be interpreted in three ways—what scientists do (scientific investigations and construction of scientific knowledge), how students learn (inquiry, critical thinking, problem solving, etc.) and a pedagogical approach that teachers use (designing investigations and inquiry) (Minner D.D, Levy A.J 2010). The second and third aspects have important implications for science curriculum and pedagogy. In this context, teachers play an important role in the process of adopting scientific inquiry in science lessons and developing students' views on the targeted aspects of NOSI. Lack of understanding about scientific inquiry is one of the major reasons for teachers to apply scientific inquiry in their pedagogical discourse. Research reveals that Nature of Scientific Inquiry (NOSI views) of the majority of students at all levels are naive and undeveloped (Lederman et al., 2019; Lederman, 2012). The studies investigating NOSI views of pre-service teachers, are insufficient (Baykara & Yakar, 2020; Şenler, 2017). The studies reveal that school students, pre-service and in-service teachers have insufficient and partial views about SI. It is also challenging to capture and understand various perspectives and views about scientific inquiry due to lack of valid and reliable tools (Lederman et al., 2019). This study explores pre-service teachers' views about various aspects of scientific inquiry (SI).

Methodology

The present study which focussed on PSTs views and understanding about scientific inquiry used a descriptive survey approach.

Lederman et al (2014, 2019) identified eight aspects of scientific inquiry. These are “(1) all scientific investigations begin with a question and do not necessarily test a hypothesis; (2) there is no single scientific method; (3) inquiry procedures are guided by a question asked; (4) all scientists performing the same procedures

may not get the same results; (5) inquiry procedures can influence results; (6) research conclusions must be consistent with the data collected; (7) scientific data are not the same as scientific evidence; and (8) explanations are developed from a combination of collected data and what is already known”. These aspects were used as the framework for development of the views about scientific inquiry (VASI) questionnaire, i.e., an instrument used to assess teachers' understandings about scientific inquiry. As it is very difficult to capture PSTs real position on various aspects of SI, the study used qualitative analysis method by coding and categorising the responses to explore PSTs views about SI.

Sample— Purposive sampling is used to select the participants for the study. The sample constitutes 58 PSTs of year 1 and 49 PSTs of year 3 of a four-year integrated teacher education program in India. All the PSTs voluntarily participated in the study and as per research ethics, the purpose of data collection was shared with the participants.

Instrument— the data was collected using the adapted version VASI (Views about Scientific Inquiry) Questionnaire developed by Lederman et al (2014, 2019). All the eight aspects of VASI questionnaire were represented on a 3-point rating scale, followed by open ended questions for giving their reasons. The questionnaire was administered at the beginning of the session. As the aim of the study was to explore the PSTs understanding and views about SI, qualitative analysis was used. All the responses to the above mentioned eight aspects of SI were coded as per the understanding of SI cited in the related literature (Lederman and Lederman, 2008, Lederman et al 2014, Lederman et al 2019). A scoring rubric was developed to categorise the responses as per the above literature review. The responses

on the VASI questionnaire were coded as 'informed', 'mixed', 'naive' and 'unclear' (Lederman et al 2014). The scoring rubric is depicted in Table 1.

Table 1: Rubric for coding responses

Informed View	Mixed View	Naïve View
Complete and consistent with contemporary understanding of SI Able to substantiate with examples.	Consistent with contemporary understanding but not able to give reason for their view or incomplete and wrong reasoning. Partially consistent view.	Inconsistent understanding. Wrong or incoherent reasoning

All the responses which were completely incoherent or partly written or left have been coded as "unclear". Exemplar responses were validated by two experts before final categorisation.

Discussion

This section presents the analysis of the responses of the PSTs on various aspects of SI. Table 2 represents the PSTs responses for the eight aspects reflected in the questionnaire in the four categories.

Aspect 1— Regarding the aspect that *all scientific research begins with a question, but does not necessarily need to be tested with hypothesis*, majority of respondents (51%) have informed view. Qualitative analysis of

responses revealed that majority of PSTs are of the view that question plays a very important role in investigation but some of them had differing views regarding the hypothesis. "*Scientific investigations begin with a problem/question since initially the reason to start an investigation is a question that arise in our surroundings*". (S 43). Another PST remarked that "*I think the initiation of a scientific investigation do begin with a question. For example: when an apple fell on Newton's head, his first question was "Why did it fall?" which was a question and led to the discovery of gravitation. It was the starting point for a scientific investigation without any hypothesis*". (S7). Some of the responses which reflected mixed view are "*Yes I do agree that scientific investigations begin with a question but it does not mean*

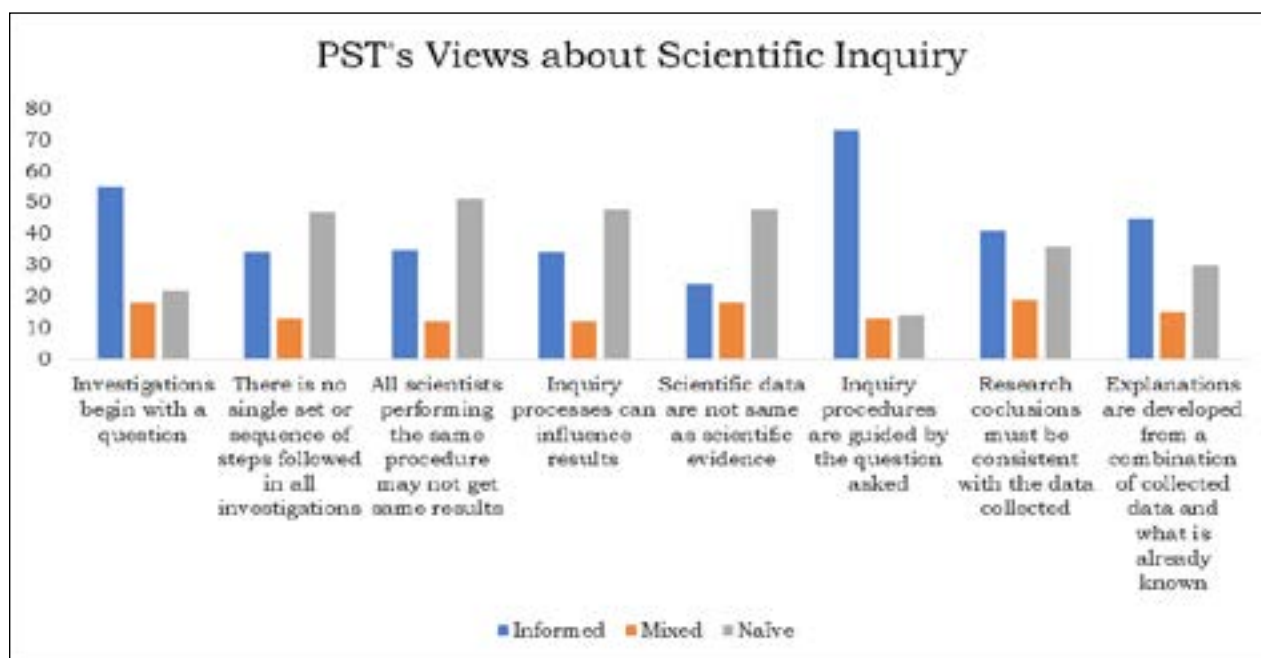


Table 2
Percentages of PSTs having Informed, mixed, naïve and unclear views about Scientific Inquiry

S. No	Aspect of SI	Informed			Mixed			Naïve			Unclear		
		Year 1 (N-58)	Yr 3 (N-49)	Total (N-107)	Yr 1 (N-58)	Yr 3 (N-49)	Total (N-107)	Yr 1 (N-58)	Yr 3 (N-49)	Total (N-107)	Yr 1 (N-58)	Yr 3 (N-49)	Total (N-107)
1	“Investigations begin with a question”	28 (48.3%)	27 (55.1%)	55 (51.4%)	8 (13.8%)	10 (20.4%)	18 (16.8%)	12 (20.7%)	10 (20.4%)	22 (20.6%)	10 (17.2%)	2 (4.1%)	12 (11.2%)
2	“There is no single set or sequence of steps followed in all investigations”	13 (22.4%)	21 (42.9%)	34 (31.8%)	8 (13.8%)	5 (10.20%)	13 (12.1%)	29 (50%)	18 (36.7%)	47 (43.9%)	8 (13.8%)	5 (10.2%)	13 (12.1%)
3	“All scientists performing the same procedure may not get same results”	11 (19%)	24 (49%)	35 (32.7%)	5 (8.6%)	7 (14.3%)	12 (11.2%)	38 (65.5%)	13 (26.5%)	51 (47.7%)	5 (8.6%)	4 (8.2%)	9 (8.4%)
4	“Inquiry processes can influence results”	12 (20.7%)	22 (44.9%)	34 (31.8%)	7 (12.1%)	5 (10.2%)	12 (11.2%)	27 (46.6%)	21 (42.9%)	48 (44.9%)	11 (19%)	2 (4.1%)	13 (12.1%)

5	"Scientific data are not same as scientific evidence"	11 (19%)	13 (26.5%)	24 (22.4%)	8 (13.8%)	10 (20.4%)	18 (16.8%)	25 (43.1%)	23 (46.9%)	48 (44.9%)	11 (19%)	6 (12.2%)	17 (15.9%)
6	"Inquiry procedures are guided by the question asked"	41 (70.7%)	32 (65.3%)	73 (68.2%)	8 (13.8%)	5 (10.2%)	13 (12%)	3 (5.2%)	11 (22.4%)	14 (13.1%)	6 (10.3%)	1 (2%)	7 (6.5%)
7	"Research conclusions must be consistent with the data collected"	19 (32.8%)	22 (44.9%)	41 (38.3%)	12 (20.7%)	7 (14.3%)	19 (17.8%)	21 (36.2%)	15 (30.6%)	36 (33.6%)	5 (8.6%)	6 (12.2%)	11 (10.3%)
8	"Explanations are developed from a combination of collected data and what is already known"	22 (37.9%)	23 (46.9%)	45 (42.1%)	9 (15.5%)	6 (12.2%)	15 (14%)	17 (29.3%)	13 (26.5%)	30 (28%)	9 (15.5%)	8 (16.3%)	17 (15.9%)

that hypothesis will not be tested" (S17). "According to me, scientific investigation may arise from questions while checking the hypothesis at the same time. think testing hypothesis is not necessary as this gives us a new and fresh way to look at things and then later on in our research we can compare and analyse our results with the given hypothesis and we can compare them" (S72). "A scientific investigation typically begins with observations. Observations often lead to questions" (S42). An example of naïve view is "A hypothesis is a possible logical answer to a scientific question, based on scientific knowledge" (S23). The trend also shows that senior PSTs (Year 3) have more informed and mixed views in this aspect as compared to the junior batch of PSTs (Year 1).

Aspect 2—"There is no single set or sequence of steps followed in all investigations"—In this aspect majority of PSTs have 'naïve' view of predominance of one single or correct method of investigation and that the sequence of steps followed in an investigation or experiment is both predetermined and fixed. One PST remarked that, "to carry out any research objectively, there has to be a sequence that is to be followed" (S 22). Another one shared that, "generally a scientific inquiry should follow a set a procedure so as to not create any biases. Follow a set of guidelines minimises the chances of a mistake" (S 17). Another PST shared that, "I think in science we have predetermined steps to do an activity or experiment and if we skip or change the any step of the experiment, we may not get the same or right result" (S 9). Few PSTs with mixed views shared that there may be more than one method in any scientific investigation but were not able to substantiate further. Only (32%) PSTs gave informed view about the multiplicity of scientific processes. For example, a PST remarked "Set and sequence of steps followed in a scientific inquiry may vary from person to person as different people have different opinions and the questions and conclusion which arise in their minds may be different as well" (S 21). Few responses also showed

that PSTs have interpreted experimentation as different from investigation. For instance, one PST remarked that "An experiment will have one method only which can be replicated but an investigation can be done in various ways"(S14). The percentage of informed views increased with the year of study i.e., senior PSTs have more informed view than fresh PSTs.

Aspect 3 — "All scientists performing the same procedure may not get same results"—In this aspect too, a majority of PSTs have naïve and mixed views. Majority of them expressed the view that scientific investigation is determined by the steps, not by the working of a scientist. So if the same procedure is followed, results also need to be the same. The subjectivity in interpretation of data and influence of other factors were not acknowledged by PSTs. The trend across the years shows increase in the informed view in the senior PSTs as compared to junior PSTs. Some of the naïve views are "conclusions must be the same if they are figuring out the same thing as science is universal(S3). "Even for the same thing, different procedures will lead to the same conclusion. If research results can be replicated, it means they are more likely to be correct. Replication is important in science so scientists can check their work. (S34) Some of the mixed views are – 'Sometimes it holds true sometimes it doesn't, two scientists working on the same matter can come across very different conclusion but in some case no matter how many scientists work on it, the result is universal!' "It depends on the experiment that the scientists are testing out the universal experiments will have same conclusion but there can be different conclusions for other procedures'(S22)

Analysis of responses reveal that few PSTs have informed view like 'True, as all the scientists cannot come on the same conclusion, every scientist would have a different point of view, perspective and analyses' (S 27). Another PST shared that "Socio cultural beliefs and working culture of the scientists influence the outcome of their research" (S78).

Aspect 4 — “Inquiry processes can influence results”. In this also majority of PSTs have naïve views as compared to informed views though the difference between the two groups is less. However, it is interesting to note that majority of senior PSTs (45%) have informed views whereas similar number of fresh PSTs have naïve views. Some of the responses which reflect naïve understanding are--

“No inquiry procedures don’t influence the conclusion because what we get as a conclusion is well researched and conclusion is the end result after all the inquiry procedures have taken place”. (S43)

“If an inquiry is about the same thing, then their conclusions must be the same as science is universal” (S 53). Few PSTs with mixed views though agreed with the aspect, were not able to substantiate with any examples or further elaborate their understanding. Few exemplars are—

“Yes, if different inquiry procedures are followed then it will definitely influence the conclusions”. (S64). One PST shared that, “Yes, I think inquiry procedure can influence the conclusions for example again in the case of periodic table the inquiry procedure by Mendeleev included atomic mass where’s the modern periodic table included atomic no. Which actually influenced the conclusion” (S19). In this example, it can be seen that PST did not have clarity regarding inquiry procedure and assumptions on which theoretical models are based.

Aspect 5 — “Scientific data are not same as scientific evidence”.

Majority of PSTs have not understood the difference between data and evidence as the responses in the naïve and unclear category is highest in this aspect. Very few had informed view that data are observations gathered by scientists during investigation whereas evidence is interpretation and

product of data analysis. Some exemplars of naïve view are:

“Scientific Data can become a Scientific Evidence But it is not necessary that every Scientific Evidence is Scientific Data” (S 18)

“Scientific data can be variable but scientific evidence can’t be variable” (S27)

“Scientific evidence is a body of fact showing whether a hypothesis is true or not while scientific data is the basis of evidence” (S 58)

“Data means numbers and evidence means what we observe directly” (S 7)

Some examples of informed views of PSTs are:

“Scientific data is defined as information collected using specific methods for a specific purpose of studying or analysing which is considered to be as scientific evidence” (S 23)

“Scientific data is raw information with no judgment attached. Evidence is when data is used to try to prove or disprove a particular point” (S14)

The mixed responses were correct but explanations were not clear or specific. For instance, a PST with mixed view share that *“Data means information whereas evidence means proof. They may not be same”. (S 71)*

Aspect 6 — “Inquiry procedures are guided by the question asked”. In this aspect, it is found that majority of PSTs (68%) have informed view and shared that the question forms a basis for inquiry. Some of the responses which reflect this view are as follows:

“Questioning is the first step in every inquiry which is followed by the whole procedure. So yes, the Questions play an important role in giving a direction to whole of the inquiry” (S 18)

“Yes, I agree. Inquiries are very much guided by the question asked for example major investigations like periodic table are more accurate today from when it was first made, which are guided by questions” (S19)

“Initially inquiry procedures may be guided by the question but during an inquiry many other different questions will arise as well which can also move an inquiry in a completely new direction” (S 61).

In this aspect also, senior PSTs have more informed view than first year PSTs.

Aspect 7 – *“Research conclusions must be consistent with the data collected”* — Majority of PSTs have informed mixed regarding this aspect also. *The data is the key source of conclusions hence the conclusions will not be accurate unless consistent with the data collected (S14).* However Significant number of PSTs (33%) have naïve view also.

Some examples of naïve view—

Conclusion may or may not be consistent with the data collected. The data collected may have some other inference which wasn't evidently visible. (S33)

Conclusion cannot be consistent as it gets evolved and accurate with many discoveries(S21).

In this also, third year PSTs have better understanding and reflects informed view than the new entrants.

Aspect 8 — *“Explanations are developed from a combination of collected data and what is already known”*. In this aspect only 42 per cent have informed view and expressed that both present data and existing literature on the topic are essential to develop an explanation. Some of the exemplars of naïve and mixed views are:

“Explanations are surely developed from a combination of researched data but it's not necessary that we need an already known information too. The explanation could be even about what

previously was known is now false” (S 41).

“Sometimes it can be true but it is not compulsory as we live in a dynamic world and explanations can be developed from critical thinking and logical reasoning and not just from data collected, some facts are known but there is a lot more to discover and explore”. (S 45)

“Not always, many theories are just hypothesis like the shape of electron cloud.” (S12).

The trend across the years suggests that though there is increase in informed views in senior students, however, naïve view is almost the same.

Conclusion and Implications

The present study explored the pre service teacher's views about various aspects of scientific inquiry using adaptation of VASI tool developed by Lederman et al (2014) for meaningful assessment of Scientific Inquiry. Qualitative analysis of the responses of 107 PSTs helped not only in categorising the views into 'informed', 'mixed', 'novice' understanding but also provided a rich insight into their conceptions about various aspects of SI. It is found that majority of PSTs have 'informed view' in two aspects of SI namely “all scientific research begins with a question, but does not necessarily need to be tested with hypothesis” and “Inquiry procedures are guided by the question asked”

However, they have naïve and mixed understanding in four aspects— “There is no single scientific method”, “Inquiry procedures can influence results”, Scientists performing same investigation gets same results” and “Scientific data and evidence are not same”.

The qualitative analysis reveals that some reasons for these naïve and mixed views are— the manner in which science is presented in textbooks, emphasis of particular method of investigation and experimentation,

overreliance on prescribed curriculum and textbooks, inadequate opportunities for self-directed inquiry in science. This paper is a part of a larger research which includes baseline study of PSTs understanding and views about various aspects of SI and further designing the intervention on the basis of these. The study has important implications for teacher education programs. In order to promote scientific literacy in prospective teachers, it is important to incorporate Nature of Science (NOS), Scientific Inquiry (SI) through engagement in scientific processes (SPs) in self-directed experiential manner. TEPs need

to provide scope to engage PSTs in laboratory and non-laboratory methods of inquiry and research. Both the foundation and pedagogy courses need to provide opportunities to engage in depth in various aspects of SI and reflect on their understanding. TEPs should have modules designed to address these and include historical aspects of science and socio scientific issue in the curriculum. It is important that prospective teachers have informed views about SI so that they can promote scientific inquiry and scientific literacy in their students during their professional engagement.

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Professional Preparation of Pre-service Teachers Post NEP-2020: Some Suggestive Changes for Quality Improvement

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Abstract

Teacher education preparation have undergone sea changes since its inception from colonial times. Most of the teacher training programs in the early phase of teacher education were influenced from western ideologies. Even after Independence, the influence of western thoughts found its place in the preparation of teacher education programs, though preparation of teachers was for Indian classrooms. Even today, foundation of teacher education program is more based on philosophical, sociological and psychological ideologies and theories which often does not suit to Indian classrooms or Indian children. More importantly, it has been highlighted in many reports that teacher preparation process is faulty and more often than not non-contextual in terms of need and aspiration of Indian children studying in various types of schools. So, it can be said that professional preparation of teachers has never risen to the level of expectations of school and society. NCF (2005) and NCFTE (2009) has questioned the practices of teacher education and raise their concerns over the ill-preparation of teachers in TEIs and recommended to overhaul the teacher preparation process. Practices of teacher education programme hasn't changed much even after revamping of curriculum in 2014 as most of the TEIs suffer from various ill-practices which are detrimental to profession. That's why when debate arises, whether to restructure the teacher programs, NEP-2020 comes with the solution that all teacher education institutions will no longer be stand-alone and they have to become multidisciplinary by 2030 and only four-year Integrated Teacher Education Program will be run in the country post 2030. The present paper suggests few of the imminent changes that need to be done to improve the teacher education programs in the country.

Introduction

Teacher education and its quality has always been the concern among the educationist of the nation. Several commissions and policy documents in the past had highlighted the poor quality of professional preparation of the teachers in the nation. University Education Commission (1948) while highlighting about

the initial teacher preparation in the country had pointed out that teacher education programs suffer not only physical isolation but also suffers from intellectual isolation. Kothari Commission (1964-66) too commented that teacher training programs of the country do not cater to the needs and demands of the schools and society. National Commission on Teachers popularly known

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as Chattopadhyay Committee which was commissioned for looking after the affairs of teachers of the country had critically remarked that *“If the university falters in this key function, there is little that can be done to save the school system from the deleterious effects of its dysfunctionality (GOI, 1985 p.3)* and teacher education institutions and their program have faltered in their functions. The commission highlighted that the high status of the teachers can only be re-claimed back if teachers have high level of knowledge and professional competencies. The two highly acclaimed and most refereed policy document of 21st century in India in teacher education-National Curriculum Framework (NCF, 2005) and National Curriculum Framework of Teacher Education (NCFTE, 2009) has highlighted the present condition of teacher preparation in the country and showed their serious concern towards the mechanised and routinised form of teacher preparation as well as the sub-standard quality of teachers being prepared in the country. Both the documents opined that, the quality of teacher preparations could be substantially improved, if the process of teacher preparations and its curriculum is revamped. Justice Verma Committee (2012) report on teacher education came as the nail in the coffin for teacher education wherein it not only highlighted the substandard quality of teacher preparation but criticized regulatory body NCTE heavily abouts its failure in performing the regulatory functions. Justice Verma committee (2012) pointed out that teacher education institutions have become commercial shops and degrees are being sold with different price tags under the nose of NCTE. Post Justice Verma Committee, NCTE tightened its noose and came down heavily on teacher education institutions and started to derecognise those institutions that does not fulfil the norms and standards as per NCTE (2014) regulation. NCTE through gazette notification introduced not only changes in the curriculum as prescribed by NCFTE (2009) and reiterated by Justice Verma Committee, but also took some more

measures to enhance the quality of teacher preparation along with stringent regulatory functioning. After 2014, NCTE has taken several initiatives to improve the quality of teacher education and its program and thus collaborate with National Assessment and Accreditation Council (NAAC) and National Accreditation Board for Education & Training (NABET) to not only inspect the teacher education institutions but also accredit them so that prospective teachers of teacher education be made aware of the quality of teacher education institutions and its programs before getting enrolled in the institution. Moreover, some other initiatives taken by NCTE to improve the quality of teacher preparations in this direction are: mapping of teacher education through Geographical Information System (GIS), Online selection of Visiting Team (VT), Online Selection of Appeal etc. On the professional front, NCTE brought out two-year teacher education curriculum which is in tune with what has been prescribed by NCFTE (2009). The curriculum revised by NCTE is made of three key components: liberal/foundational studies, curricular and pedagogical studies and third institutionalization of internship model of school experience program. Notification of change in norms and standards published vide gazette notification in 28th November, 2014 and all teacher education institutions across the country implemented it thereafter. In spite of suggesting slew of changes by the recent policy documents NCF (2005), NCFTE (2009), Justice Verma Committee (2012), NCTE (2014), Draft of New Education Policy (2016 & 2019), the efforts of improving the quality of professional preparation of teachers has always eluded in teacher preparation (Kumar & Wiseman, 2021). Various research reports published in last six years regarding the quality of teacher education have made teaching professionals to re-think how to improve the quality of teacher education. It is true that quality is not a magic wand, that by mere uttering the word “quality”, quality would come into teacher education institutions. Quality has several facets and if

each and every facet of teacher preparation is addressed in a professional manner, then automatically quality of teacher education falls in line. NEP-2020 has highlighted that there are almost 10,000 sub-standard teacher education institutions in the country which needs to be shut down if they haven't improved themselves in a year's time. In the recent past many of the government institutions have also faced the wrath of NCTE when the order of withdrawal of recognition of several state-run teacher education programmes was notified when

it was thought that state-funded TEIs are immune to such type of stringent action, as most of the institutions do not fulfil the norms of teacher education programs. Most of the teacher education institutions suffer from severe shortage of qualified faculty. Quality of teacher-educators plays a important role in professional preparation of teachers. The given table below is the data taken from annual reports of NCTE of last five years from 2015-2020 about the number of TEIs operating B.Ed (only) and M.Ed (only) programs across India.

Table No.1: Number of TEIs and their Intake Capacity for B.Ed and M.Ed Programs from 2015-2020

Sr. No	Year	No of B.Ed TEIs*	Intake capacity of B.Ed	Difference In intake capacity	No. of Qualified Faculty Required as per NCTE norms	No. of M.Ed TEIs	Intake capacity of M. Ed	No. of Teachers Required in M.Ed	NET Qualified Candidates as per UGC Portal in Education Discipline#
1	2015-16	8612	861174	-	137788	1021	33865	6773	59415
2	2016-17	9812	947952	86778	151672	1198	50795	10159	
3	2017-18	10008	960087	12135	153614	1213	54022	10804	
4	2018-19	10068	996185	36098	159389	1346	66442	13288	
5	2019-20	9634	953660	-42525	152585	1292	63745	12749	
6	Total		953660		152585	1292	63745	12749	

*Assuming that each TEI have an intake capacity of 100 students

*As per NCTE norms 16 teacher educators are required for 100 students

* The ratio of faculty and students is 1:6.25in TEIs

Numbers available in UGC website

The last five-year data obtained from NCTE reports indicated that from 2015 onwards, there is a constant rise in the number of TEIs offering B.Ed program in the country

along with increase in the intake capacity. As per the NCTE norms of 2014, for every 1 unit of B.Ed program (50 students) there would be 8 qualified teacher-educators to be

appointed in TEIs whereas this number for M.Ed program is 10 for 50 students. It means teacher-student ratio in M.Ed program is 1:5 and 1:6.25 in B.Ed. The NCTE norms, to be qualified as teacher-educator for both B.Ed and M.Ed programme is that a faculty must hold a postgraduate degree in education with either NET in education or Ph.D in education or both. If we look at Table No. 1 it indicates from 2015 to 2020, the intake capacity of only B. Ed program is 953660 whereas for M.Ed program annual intake capacity of 1292 TEIs are 63745. If we calculate the number of faculty members required for both the programs, only B. Ed program requires 1,52,585 qualified teacher-educators whereas M.Ed program requires 12,749 qualified teacher-educators. Therefore, in the crudest sense the total number of qualified faculty required for both the programs are 1,65, 334. As per the UGC website, the total number of NET qualified candidates in education subject is almost 59415 from 1993-2020 (Source: Academic Jobs for NET/SET/Ph.D qualified candidates, dated 8th November, 2021). Assuming all the NET-education qualified candidates are being appointed in B.Ed program only, then also, country requires additional 90,000 teacher-educators to prepare B.Ed teachers. Another fact that can be inferred from the table that the number of TEIs offering M.Ed program is only 1292 whereas for B.Ed it is 9634 i.e., 7.5 times higher than the M.Ed program and in terms of capacity it is almost 15 times higher. Since the M.Ed. program and its intake capacity along with the number of students qualified the NET exams are not commensurate with the number of teachers required to train them. Therefore, there is a big gap between demand and supply; as a result, it directly affected the quality of preparing the professional teachers. This is one aspect which has been highlighted and there are many others which have been discussed in the following section to improve the quality of professional preparation of teachers:

1. Manpower Planning of Teachers & Teacher Educators: A decade back,

NCTE has started manpower planning in terms of the number of teachers required in schools and projection for next 10 years would be taken up so that the demand and supply chain could be matched both for teachers and teacher-educators in the country. The project was started in 2008 by NCTE, but somehow it could not be sustained. There are still regions where there is a dearth of trained teachers in school but there are regions where trained teachers are in abundance. Moreover, trained manpower planning is not only required for different stages of education like pre-primary, elementary and secondary but also with respect to different school subjects. Unfortunately, TEIs have been mushroomed all across countries and also thriving without having adequate attention regarding demand of teachers at each stage and for each school subject. NEP-2020 recommends multidisciplinary education starting from secondary level to teacher education institutions, but it is important to remember that four year Integrated Teacher education Programme (ITEP) is not only a capital intensive but also investment of 4 crucial years of students, therefore it is necessary that government must ascertain the number of teacher and teacher-educators to be required in next one-decade both in terms of stage specific as well as subject specific including teachers for performing and visual arts, crafts (vocational), physical education, yoga, special education, etc. When we have manpower planning for school teachers, we would be in a position to find out how many teacher-educators are needed to train the prospective teachers.

As per Table No.1, demand and supply of teacher-educators required in TEIs to prepare quality school teachers is unmatched. In other words, there is huge shortfall of qualified teacher-educators in the country (Pritam, B., 2018). How would this gap of demand and supply be bridged when there is low

availability of the number of NET/Ph.D qualified candidates? The answer lies to the question: Does the country need almost 9 lakh teachers every year? If yes, then, not only increase the number of teacher education institutions offering the M.Ed program proportionately but also increase the pass percentage of NET qualified candidates. If we do not require a large number of teachers in the school, then the next alternative is to shut down the teacher-education institutions which do not have qualified faculty. So, it is essential that a quality teacher education program requires quality faculty and one of the parameter of quality is equated with faculty having NET and Ph.D. (Source: UGC Minimum Standard, 2018). The biggest challenge that will come up is, to do the exercise of manpower planning at school level for school subjects teachers in B.Ed. program and for teacher-educators with respect to pedagogy and foundation-based subjects in M.Ed program that is required to train pre-service teachers.

2. Quality Curriculum: Professional preparations of teachers are generally guided by well-defined curriculum operating in the TEIs. Curriculum framework provided by NCFTE (2009) followed by NCTE (2014) norms and standards has given an outline to design curriculum of teacher education program. The curriculum framework is based on the three broad areas: first, perspectives of education; second, curriculum and pedagogic studies; and third engaging with the field/practicum which includes enhancing professional capacities, practicum on perspectives, curriculum, pedagogy studies and school internship. Many universities designed their curriculum within the framework and bring out the institution curriculum of the aforesaid programme. Curriculum was diluted by majority of TEIs and essence of preparing teachers from the point of view of NCFTE (2009) was missing in soul and spirit (already discussed in point uniform curriculum). The result

was that nothing substantial changed at the grass-root level except the increase in the duration of program. The reason behind that is due to dearth of qualified faculty in the TEIs, entire philosophy and perspective of teacher education was misinterpreted. In many of the TEIs syllabus, author scrutinized the syllabus and found that the nomenclature of the paper of psychology of education as per NCTE but majority portion of the content of the syllabus was old what they used to teach (name of the universities was kept anonymous by the author). In one of the surveys done by the NCTE (2014) to find out how many universities and state education department have changed their curriculum in tune with NCFTE (2009), it was reported that only 30 per cent of universities changed their curriculum whereas this percentage for M. Ed program was 46 per cent and for D.El.Ed it was 37.5 per cent (NCTE Annual Report-2014-15, p.10). It itself is indicative that universities and TEIs are highly resistant to curriculum reform. Post 2014, most of the universities have designed the curriculum as per NCTE (2014) wherein flexibility is given to design 30 per cent of syllabus on their own. Many of the TEIs are unable to design their curriculum especially in emerging areas of teacher education like understanding the discipline, knowledge and curriculum, language across curriculum etc. in these courses and the TEIs that have designed it interpreted in their own way. It is essential to carry out a study to see how many TEIs in the country are following the prescribed curricular norms of NCTE (2014). Recently, NEP-2020 recommended for four-year Integrated Teacher Education Programme (ITEP) and suggested that by 2030 all teacher education institutions be changed to multidisciplinary educational institutions. But, the foundation of four-year ITEP was laid in the year 2018 wherein NCTE laid down the norms and

standards of four-year teacher education programme wherein two programmes were prescribed: one meant for pre-primary to primary and another upper-primary to secondary. But after NEP-2020, NCTE has brought out norms and standards of ITEP vide gazette notification in the month of October, 2021 wherein it was reconfigured as per the latest structure of school education 5+3+3+4. Model/suggestive curriculum would be provided by NCTE in due course of time and TEIs has the flexibility to adapt/adopt the curriculum with institutions having an autonomy of deviating from curriculum up to 30 per cent. The gazette notification has said that within 90 days a model curriculum would be uploaded on website. Hopefully, NCTE would come out with the model curriculum so that TEIs would follow it. Also, it is imperative for NCTE to take stock of the situation on a periodic basis that universities and TEIs offering four-year ITEP programme must have at least aligned their curriculum at least 70 per cent to what has been suggested in model curriculum otherwise errant TEIs would take the benefit out of it and offer sub-standard/obsolete curriculum to prepare teachers.

3. Social Status of Teachers: To become teachers in schools is the least preferred options among the youth. It has been observed in the past that bright young minds never come into the field of teaching professionals. In other words, teaching as a profession has never attracted the bright young minds of the country. As a result, most of the people who have come into this profession are more by chance than the choice. The reasons may be several, ranging from social status and recognition, monetary benefits and incentives, limited opportunities for professional growth in career, etc. If, one compares the professional growth curve of different professionals like doctors, engineers, management, lawyers, architecture and

even scientist, automatically one would find the lowest among them. In a global study conducted by Peter Dalton et al, in 2013, surveyed 21 countries to find out the global status index of teachers among the various professionals and reported that teaching professionals ranked 7 out of 14 different professionals in terms of respect though it varies with countries and their cultural and social milieu. Moreover, report also highlighted that 75 per cent of the countries people believed that social status of teachers is similar to that of social workers. Countries like China, South Korea, Turkey and Egypt encourage their younger generations to become teachers as these are the countries which showed high respect to their teachers whereas most of the European countries participated in the survey did disclose that pupils of their countries do disrespect their teachers. In regard to pay, almost 95 per cent of the people surveyed reported that teachers should be paid higher than what they are getting now. Another, outcome of the report is that teachers pay be linked with performance of students. Report also highlighted that, countries have full faith and trust on their teachers that they were providing quality education to the children. Finland and Brazil teachers are top ranked in terms of providing quality education whereas Israel, South Korea, Egypt and Japan are lowly ranked among the countries. Thus, teachers' social status, salary and other benefits should be commensurate with other professions. Similar study was conducted in 2018 where the sample was extended to 35 countries and almost similar result was obtained what was obtained in 2013. Surprisingly in a 2018 study, Indian population was surveyed and found out that more than 50 per cent of parents encourage their children to become teachers. NEP-2020, has acknowledged in the document that "*..... empowerment of teachers is not where it should be, and*

consequently the quality and motivation of teachers does not reach the desired standards” and therefore reiterated that “high respect for teachers and the high status of the teaching profession must be restored so as to inspire the best to enter the teaching profession” (GOI, MOE, p. 20). The NEP recommends the following to restore the high respect and social status of teachers:

- Merit-based scholarships to attract best talents into teaching professions;
- Appointment of high-quality teachers;
- Incentives to youth for taking up teaching professions in rural areas;
- Accommodation facilities in and around school or increased House Rent Allowances;
- High quality and performing teachers would be identified and they would be given faster promotion, incentives, social recognition etc
- Outstanding teachers with demonstrated leadership and management skills would be inducted and trained for taking positions of educational administrators
- Transparent online system of transfers of teachers only in special cases;
- High Stakes Entrance exams for entry into teaching profession like IITs and NEET;
- Mapping of subject-wise teacher vacancies in state for better manpower planning to match demand and supply;

4. Raising the Bar of Eligibility: As already stated, that teaching profession fails to attract the young and bright minds of the country, yet entry into teacher education programs only requires a graduate with minimum of 50 per cent marks (relaxation for SC/ST groups) whereas the percentage for any other professional programs to pursue is more than 60 per cent. Definitely, some improvement has been there over the past few years when NCTE made it mandatory that the first degree in teacher education should be face

to face mode and entry into the teaching profession should be through entrance examination. But many of the States or its Universities are defying the order of NCTE and resorting to the minimum eligibility criteria and thus inviting applications from students who merely fulfils the minimum criteria to enter into teacher education programs. It is true that marks cannot be the benchmark for ascertaining the quality of students but definitely, it does correspond to a certain level that a higher percentage would mean attracting good students to teaching profession. If one looked closely at IITs and NEET examination, one would find that, students who qualified these examinations their performance in 12th public examination, is equally outstanding (much higher than 60 %). So, it is imperative, that at least raise the bar of eligibility in entering into teaching profession so that at least one would expect academically sound students would enter into teaching profession. Another reason why the bar of eligibility should be raised that Teacher Eligibility Test (TET) is mandatory for appointment into schools, and the minimum criteria for qualifying the TET is 60 per cent. Therefore, it would be better that only students with minimum 55 per cent marks in graduation degree be made eligible for entering into the teaching profession like it has been there for NET-UGC for appointment of teachers in higher education and 75% for IIT-JEE Advanced aspirants.

5. Uniform Curriculum: In the year 2014, NCTE brought out the gazette notification wherein new norms and standards for two-year teacher education programmes were published. As NCFTE (2009) curriculum framework was available at that time, the proposed curriculum retain the three components of NCFTE (2009) — perspectives in education, curriculum and pedagogic studies and engagement with the field. Most of the TEIs including

education departments of Universities have tried to align their curriculum within the broader curriculum framework of NCFTE (2009). Universities are autonomous institutions, they have the freedom to design their own curriculum and get ratified by their academic and executive council, therefore many of the state universities post 2014, designed their own teacher education curriculum without understanding the soul and spirit of curriculum as proposed by NCTE. In one of the state University, within Curriculum and Pedagogic studies, it was observed by the author that a paper was kept called "Understanding the Discipline" wherein Discipline is equated with Punishment and entire syllabus was drafted on it (author was asked to set the question paper based on the syllabus). In another University, author experienced that courses of the program were overloaded with content for example in one of the paper Assessment for Learning, though it had five units but almost everything was included including the statistical portion generally meant for post-graduate program. It was observed by the author that in many of B.Ed syllabi the name of the courses hadn't changed like philosophical foundations of education, sociological foundations of education, sociological perspective of education, psychological foundations of education, philosophy and sociology of education etc. Many of the universities simply added and deleted the content of the courses without seeing its relevance and implication on training programs as well as its effect on schools. These are few instances. In one of the surveys done by NCTE (2014) on curriculum reform in context to NCFTE (2009) found out that, many universities did not change their M. Ed curriculum in tune with NCFTE (2009). Another major observation of the study was that referenced material provided in the curriculum of most of the universities are old and outdated. Internship component

is almost missing in 50 per cent of the universities, reflection and maintenance of reflective journal was found only in four universities whereas seminar and panel discussion were there in 14 universities. This study itself reflects that when curriculum of the teacher-educators is lop-sided, how could one expect the prospective teacher-educators would train his teachers. Most of the TEIs are practicing in same old fashioned as they were doing before and after 2014. It is also surprising to note that many of the Universities either do not have education departments or understaffed and they are preparing curriculum for all the affiliated TEIs. As a result, it has been observed that poor and faulty curriculum has been designed and developed and teacher preparation has been going based on these curricula. Therefore, each state should constitute Curriculum Development Committee (CDC) and prepare curriculum for various teacher education programs in consonance with national curriculum framework and run these curricula across state. This will lead to more professional preparation and less dilution in standards of teacher education preparation. Similar type of exercise should be started at the central level so that both state and central level curriculums have more commonalities or uniformity in the curriculum. This will help to prepare teachers of high quality in the nation.

Single Entry & Exist System of Teacher Preparation: In almost all the states, either state education department or universities are responsible for common admission process. In case of central universities, they have their own admission process for teacher education program. It means within a state if there is Central University, State University and education department, all are conducting separate admission processes with no parity in them. While one is taking entrance exam, other

prefers merit and some prefer choice filling. But on graduation, all become trained teachers. This multiple method of entry into professional programme has created more mess. As majority of the TEIs are functioning in private sector and many of them are shadow TEIs, their monopoly is clearly visible in admission and examination process in the teacher education programs. University merely formalised the process of admission and examination. Many of the TEIs sold the teacher education degrees at variable cost (Justice Verma Committee, 2012). This mars the quality of teacher education in the country. NEP-2020 is critical about these shadow TEIs and recommend that sub-standard teacher education institutions will be shut down if they do not enhance the quality of teacher preparation in their institutions. In regard to multiple entry, NEP recommends that a single-entry system will be put in place for entry of prospective teachers in teacher education program through common entrance examination just like CTET. But it is also important that not only single-entry system should be put in place but also single-exist system be put in place so as to ensure high quality teachers to be fed into the school system.

6. Approval, Accreditation & Certification of Teacher Education Programs:

In India, HEIs are governed by many educational agencies. These multiple agencies at times instead of facilitating the process of smooth management and governance, makes it more difficult and complex to run an institution. Many times, their functions overlap with each other and as a result none of the educational agencies keeps a vigilant watch on the functioning of educational institutions. Same case happens with TEIs. TEIs are being given approval by the NCTE to run the teacher education programs but most of the TEIs functions under universities as an affiliating institution. Therefore, university acts

as an academic watchdog for affiliating TEIs (exception where university runs its own teacher education programs). UGC, the third educational agency which is a regulatory body for university run programs including teacher education provide direction to universities to follow the guidelines related to admission of students, curriculum development, curriculum transaction, examination, teaching-learning process, teacher recruitment etc. which has its own implications for TEIs. Along with it, state education departments, fee regulatory bodies, etc., also plays their own role of controlling, monitoring, supervision, etc. NEP-2020 observed that conflict of interests among these regulatory bodies resulted into lack of accountability of each of them and as a result too much of governance has been in the education system. NEP-2020 recommends a light but tight system of regulations with few independent and empowered bodies to ensure “check and balances in the system, minimize conflicts of interest and eliminate concentration of power” (GOI NEP-2020 p. 47) and that’s why for approval of the course/program, accreditation of course/program and certification of the program will be done by separate bodies as the provision made by NEP-2020 by forming four verticals under Higher Education commission of India.

7. Quality of Teacher-Educators: It has been already well established from Table 1 that the number of NET qualified candidates in education discipline is far less than the actual number required. Even if we add number of Ph.D. candidates awarded in Education discipline in last five years, still it will be lesser than what is required. So, there is huge dearth of qualified teacher-educators in TEIs. As per the NCTE norms (2014) a teacher educator must be post graduate degree in education along with post graduate degree in school subject or post graduate

degree in foundation subjects. In addition to it, as per UGC norms, UGC-NET/SLET or/and Ph.D. degree in education. Since NET qualified candidates are handful in numbers so is the case of Ph.D., therefore, majority of the teacher education institutions appoint faculty who are merely post graduate degree in education. Like, in school education, in teacher education too, large percentage of prospective teacher-educators are those who lack quality. In one of the studies done by Yadav (2013) found that M.Ed program run by the private institutions lacks qualified faculty. Another key aspect is that professional development of teacher-educators teaching in private institutions and even in many of the universities have been over-looked/neglected resulting into stagnation of professional development which affects directly the quality of teacher education.

8. Process-based Teacher Preparation:

NCFTE (2009) proposed for the process-based teacher preparation programs wherein rather than looking at the product of the teacher-education programs in the form of trained teacher, focus should be on how the teacher is being trained in TEIs. NCFTE (2009) proposed that teacher preparation should be more participative, engaging and reflective wherein teachers linked the theoretical inputs received in TEIs be tested and validated in the classrooms. Teachers can generate their own ideas and validated them in the field. It further stated that teachers should not acknowledge the knowledge received from the teacher-educators or from books but critically look into it from social-cultural, political, economic and local perspective and make the knowledge more contextual while teaching students in the classroom. This would help the teachers to evolve themselves over the period of time. Teachers will be truly reflective practitioner in their own field when they are exposed to different practices of school education and they

critically reflect upon those practices and if possible, innovate them so that benefits should reach to the students, schools and other stakeholders. NCFTE (2009) proposed the following process-based preparation in its document:

- To develop understanding among teachers the socio-cultural and political milieu in which students live and thus engage with students in real settings of life with theoretical enquiry.
- Students generate knowledge based on their personal, social and shared experiences, observations and critical theoretical enquiry
- Self-learning, reflecting thinking, critical enquiry etc with contemporary issues must be encouraged among the teachers;
- Engaging with liberal studies, humanities and arts during teacher education program will widen the horizon;
- Collaborative learning among the peer-groups of different abilities must be promoted;
- Teacher identity and its social position in society must be examined by the teachers during their classroom discourse;
- Structured “space” is created to revisit, examine and challenge (mis) conceptions of knowledge;
- As far as possible, internship should be outside the boundary of rigidity, wherein teachers are given opportunities to study the schools, and its interrelationship with community. (Source: NCTE, NCFTE, 2009)

9. Multiple Evidence-based Evaluation System:

NEP-2020 highlighted that the entire education system is oriented towards rote learning and as a result evaluation seldom goes beyond information checking. Moreover, the conventional assessment tools are being used to assess the learning outcomes

of the students mostly written and sometimes oral. In recent years use of technology in education institutions has been increased and teachers are using varied technology based online/offline platforms for assessment purpose. These web-based and app-based platforms are available not only to assess the performance of the students but also finds the grey areas in their learning and simultaneously suggest ways to act upon it, so that the performance of the learner could be improved. Often a question arises, with hardly any internet penetration in the rural areas and low accessibility of digital devices among the underprivileged, how the existing digital divide would be bridged. As per the latest report and websites of government of India, all the central universities, 230 state universities, 80 deemed universities, 45 private universities and in all 1633 different institutions are connected under National Knowledge Network (NKN) through multi-gigabyte high speed internet connectivity (source: website of NKN, 2022). Moreover, under National Mission on Education through ICT (NMEICT) wherein government is not only providing internet connectivity to all colleges and universities but also providing low-cost affordable devices to institutions, teachers and students to access e-content generated by the different subject experts which are pooled at various web-based platforms available under ministry of education like UG and PG Pathshala, SHAKSHAT, NPTEL, SWAYAM, DIKSHA to bridge the digital divide. Further, under One India One Digital Platform, all the learning resources of different disciplines (e-resource) are pooled up which are scattered in different national web platforms. This will ease students and teachers to access the content (audio, videos, text-material). In the recent pandemic period, DIKSHA portal (app based or web-based) has been extensively

used by teachers and students. According to Ministry of Education, almost 3 crore hits per day was recorded indicating that large chunk of teachers and students' population were using to continue their education when face to face education was completely off (source: The Print 26th July 2021). Now with the launch of PM e-vidya scheme there has been the convergence of all digital/online/on-air education to enable multi-mode access to contents to students and teachers of school and higher education. The NEP 2020, has put huge thrust on using technology in education so to reach to the maximum learners and thus to realise the NEP objectives. Several key initiatives have already started like National Digital Educational Architecture (NDEAR) to enable the use of technology in curricular process and Structured Assessment for Analysing Learning Levels (SAFAL) to focus on testing core concepts, application oriented questions and higher order thinking skills.

In the recent report by KPMG (2022), highlighted hybrid learning as new emerging norm in educational institutions especially in tier-II and III cities, personalised adaptive learning technologies are creating space among government and private schools. Edtech companies are focusing on content generation in vernacular languages because of its huge market (NEP-2020 stressed on content generation in local languages especially till primary). In KPMG survey, it was reported almost 65 per cent students of higher education students enrolled themselves for online courses for upskilling during pandemic though 31 per cent also said that they were stuck due to pandemic effect. Another report of Government of India (2021) on Digital Education 2021 has highlighted that different states and Union Territories are making efforts and started several initiatives to bridge the digital divide and even reaching

to the unreached. The Government of India report on Digital Education has mentioned that almost 3304 schools of Bihar equipped with smart TV in one classroom. Maharashtra government too provides various electronic devices like tablets, laptops, projectors, plasma TV, DTH-TV antenna, digital boards with LMS under ICT scheme. Similarly, Uttarakhand government too distributed laptops, tablets, digital boards, PC with Integrated Teaching Learning Device, LED/LCD Plasma Screen, and Desktop to schools for effective implementation of ICT and digital learning. Similarly, Uttar Pradesh, Andhra Pradesh, Tamil Nadu and Delhi Government has also provided tablets to all regular and guest teachers (source: GOI, India Report Digital Education Remote Learning Initiatives Across India, 2021 P. 7-8). Those students who have no access to digital devices, also have been connected through local cable TV, door to door learning, or pairing with teachers, alumni, NGOs, and others. Several multinational companies under the umbrella of corporate social responsibility have started several initiatives (TATA, GOOGLE, Microsoft, etc) to digitalise education content in vernacular languages and providing training to learners how to use it and also providing various hand-held devices to local learners for using it. All efforts are being done with different stakeholders to upscale the use of ICT in education in schools, colleges and universities to encourage and support the digital learning and “No” to digital divide. In fact, many private EdTech companies are coming out with both web-based and App based platforms (offline and online) wherein they give opportunities to teachers and students to interact, engage, and learn as per their own pace. Moodle, Google, CANVAS, MOOC, etc platforms are now being widely used and offers multiple learning and assessment tools like quiz, MCQ, assignment, test, project,

rubrics, portfolios etc. to assess students knowledge that are more transparent, objective and fair and thus work towards holistic development of learners. Based on such evaluation certification may be provided.

10. Licensing of Teaching Professionals:

In India, normally graduates of teacher education program are considered as trained teachers be it in distance or face to face mode. Most of the recruitment agencies seek trained teachers for appointment at various stages of school education. It has been in practice in many of the Western and Asian countries, that trained teachers register themselves and they would be issued license as registered practicing teachers i.e., they would be given license to teach students. This license would be similar in nature to other professions like doctors, architecture, pharmacist, lawyer, special educators who are being given practicing license by their regulatory bodies. Similarly, teaching professionals would be issued license by a national agency like NCTE to become professional practitioner. Presently, TET has become the minimum norm to be appointed as elementary teacher. Centre and states are already deliberating and discussing upon extending till grade XII. NEP-2020 is silent about licensing of teaching professionals, but it has recommended of creating a body of National Professional Standard for Teachers (NPST) wherein fixing of competencies of each stage of education, appraisal of teachers based on the standards along with tenure-based review of performance is indicative of moving towards in same direction.

Quality of Internship: Internship is said to be the backbone of any professional programme. The quality of internship decides the quality of professional programme. As per NCTE (2014), in the secondary teacher education programme, prospective students have to spend around 20 weeks in schools spread

across the duration of the program. It includes preparing and delivering 40 lessons, along with completing other activities related to school. It has been a common observation of almost all policy documents that the students deliver isolated lesson plans in classroom in very mechanised manner and thus completing the ritualistic aspect of internship. Many times, these lessons are being delivered without being supervised. Practice of internship fails to develop in teacher the requisite competencies as required to teach in classrooms. NCF (2005) and NCFTE (2009) observed that, teachers are being trained to prepare lesson and deliver them without understanding that knowledge written in textbooks is not to be transmitted as it is but it has to be interpreted and validated contextually. Moreover, internship involves understanding the roles and responsibilities of being teacher as facilitator, manager, counsellor etc. In fact, they recommended that a true teacher should be a reflective practitioner. Unfortunately, in all these years, the practice of becoming a reflective practitioner has more or less remain in the curriculum. In ITEP programme, school internship has been exclusively dealt in the gazette wherein internship has been spread across four years for 18 weeks and 6 weeks of specified field work/practicum/activities

with 2 weeks for community engagement. It is imperative the process of internship may be made robust wherein prospective teachers may be evaluated based on multiple evidences collected by different stakeholders during the internship and based on it certification of completion of internship may be awarded.

Conclusion

Teacher Education program and its process needs revitalization especially in context to NEP-2020 wherein future teachers of the schools will be professionals of academic excellence who not only nurture the young minds but also enhance their self-capacities and competencies to match with global education system. Post NEP, teacher education bodies have to act firm against the slightest violation of norms and standards of teacher preparation. Starting from entry to exit, it should be robust and filtered one so that only bright young minds can come into this profession. Teacher preparation process must be closely monitored and regularly audited so that they are in tune with school system as well as with global standards. Curriculum should be revamped after every five years with addition of more professional components. Most important like any other profession, teaching license must be issued for professional practice. These few suggestions will bring quality to teacher education programs.

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Plight of Chemistry Teachers in Remote Teaching during COVID-19 Pandemic

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Abstract

Sudden emergence of COVID-19 pandemic disrupted the whole system across the globe, severely affecting the social, economic and education system affecting the pattern of teaching from traditional face-to-face (F2F) teaching-learning to remote learning. Remote teaching is defined as the technology-enhanced teaching methodology where both the students and teachers are separated at both geographical and time differences and the process of teaching and learning takes place outside the four walls of the classroom and in a setting most suitable to their situation. This work focuses on the challenges encountered by Senior Secondary teachers of Chemistry subject from Private or Government Schools and Inter Colleges in Patna District, Bihar, India and some pre-service teachers' questionnaire-based survey with 55 respondents. The survey indicates that the major problem in remote teaching is the assessment of students, providing feedback to the students and other issues pertaining to adaptability, arranging for resources along with technical errors and internet connectivity. A solution to all the problems can be achieved when teachers are more acquainted with internet-based technologies and online teaching tools, adjust their teaching plans and teaching methods, and quickly adapt to the new situation. Enhanced interactions among each other, maintenance of interest, consistent motivation and support to be dispensed to learners as well as teachers for improvement in the teaching-learning process.

Keywords: COVID-19, Remote teaching, Online teaching-learning, Senior Secondary Chemistry Teachers, Pre-service teachers.

Introduction

The SARS -CoV-2 virus or the Corona virus which first originated in China in December 2019, was first reported in India on 30 January 2020. (India Today, 30 January 2020). This virus infected the respiratory tract and has been the reason of millions of deaths

worldwide. Due to the surging active cases of COVID-19 across the globe, WHO declared COVID-19 as a pandemic (WHO, March 12, 2020). After that, there was a mandatory lockdown imposed across the country causing closure of institutions and organizations. The pandemic caused pronounced social and economic obstruction and has had

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obvious short-term and predictable long-term effects on education. “Deferral of face-to-face instruction and student assessment with the necessity of social distancing preventing the social gatherings common to all learning environments” (Hermanns et. al., 2020). Online teaching was no longer a choice but a necessity of the times. This affected the pattern of teaching learning from traditional face-to-face (F2F) teaching-learning to remote learning, where both the students and teachers were far from the four walls of the classroom and connected to each other virtually.

Remote teaching is defined as the technology-enhanced teaching methodology where both students and teachers are separated at both geographical and time differences and the process of teaching and learning takes place outside the four walls of the classroom and in a setting most suitable to their situation.

This online teaching is classified as synchronous online teaching and asynchronous online teaching. Synchronous method of teaching involves the participants to be online at the same time and mutual interface sharing. In asynchronous teaching method, study material is shared by the teachers on online platform which is made accessible to students. Asynchronous method is advantageous in terms of time, place, pace which has restrictions in case of synchronous teaching. Because of unfamiliarity with the virtual environment, disturbances and hesitation increased on both the sides. Therefore, the researchers decided to work on these problems faced by the chemistry teachers in carrying out their teaching process amid this pandemic in a setup improvised at their homes. The researchers also studied the views of chemistry teachers on some remedies which are being applied in other countries and states during these times and how they are coping up during this unexpected shutdown. All institutions shifted to online platforms and educators took this situation as an opportunity to innovate, experiment and create an era in the realm of remote online teaching.

Objectives

1. To study the common problems faced by the chemistry teachers and pre-service student teachers in remote teaching, specifically in content preparation and delivery, time and resource management, communication and assessment.
2. To assess their responses, acknowledge their experiences and review their views on the remedial steps implied by them in online teaching.
3. To compare the responses of the chemistry teachers according to their gender (M/F), type of management of the institution (Private/Government) and their teaching experience (more experienced and less experienced teachers).

Methodology

Questionnaire-based survey form containing some quantitative and exploratory questions along with general personal information of chemistry teachers was prepared entitled “A Questionnaire Survey Form on Plight of Chemistry teachers in Remote Teaching”. The form is divided into 6 sections which is categorized into: Section 1 includes Personal Information; Section 2 includes questions pertaining to problems faced by teachers in content preparation; Section 3 includes problems pertaining to time and resource management; Section 4 includes problems in communication and assessment; Section 5 includes other problems like distractions during class and views on support from institutions during the course. Finally, Section 6 contains the views of teachers on remedies to overcome the problem arising in the teaching learning process. The content for the form was prepared on Google sheet form and its link was generated i.e., <https://forms.gle/ZP84sUqzwGxAtiFMA>.

The questionnaire was developed following a sequence of steps, in which the first step was to conduct exploratory research from available literature and preliminary informal interviews from known targeted respondents. Next, population of interest was formulated

based on the objectives of research, keeping in mind the expected parameters of age, gender, experience, etc. Plausible ways of reaching out to the respondents were next planned in which emailing of the questionnaire, interview through telephone and through text message was expected to be found most convenient. Development of content of questionnaire evaluating their authenticity in fulfilling the objectives was the next step undertaken for the development. In order to ensure variability and enrichment of the objections, open-ended and exploratory questions were included as part of dummy survey form. Questions developed at this level were sent to potential respondents for validity check, after which a few questions were eliminated on the recommendations of the responses. After that, questions were arranged in meaning format and order with proper closing questions and later developed on Google forms whose link is provided in the previous paragraph.

Participants

Senior Secondary Chemistry teachers of Government Schools and Inter Colleges in the Patna district of Bihar were approached with the help of B.S.E.B website and also enquired from reliable sources for getting the contact information of the Chemistry teachers for the study. Similar data collection

was done for private school teachers from popular schools and teachers were contacted through email-id and mobile number and survey form was shared to all of them.

Data Collection and Analysis

The responses to the Google form was kept open for two weeks which was shared to the teachers via their WhatsApp or email. Sixty respondents (teachers and student teachers) were contacted for the survey out of which 55 respondents filled the Google form.

Results and Discussion

Lack of face-to-face interaction in real classroom teaching and restricted freedom of implementation of variations in teaching methodologies posed problems in online remote teaching. Problems which were being faced by teachers in adapting to these changes (43.6%), preparing e-content and its delivery as there is lack of formerly prepared content on online platforms majorly for state curriculum (40%), problems arising due to resources (23.6%) and internet connectivity (45.5%) but the major inconvenience for the teachers is in assessment and feedback of students (52.7%) and in checking progress in achievement of learning outcomes. Problems in online teaching was summarised and the percentage of responses were analysed which is shown in Figure 1.

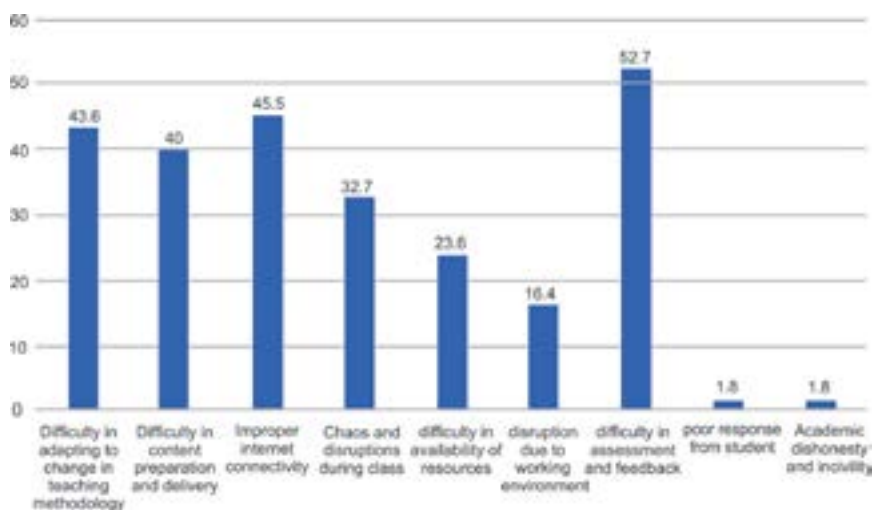


Fig 1: Graph of data presenting the percentage of responses to the problems

These problems were further elaborated and enquired in detail from all the respondents whose data analysis shows availability of resources, increased doubts from students and institutional support holds great significance and posed problems to the

teachers irrespective of gender, experience and institutions to which they were associated with. During the pandemic, the pattern of examination and the type of questions underwent a complete transformation. Results as shown in Figure 2.

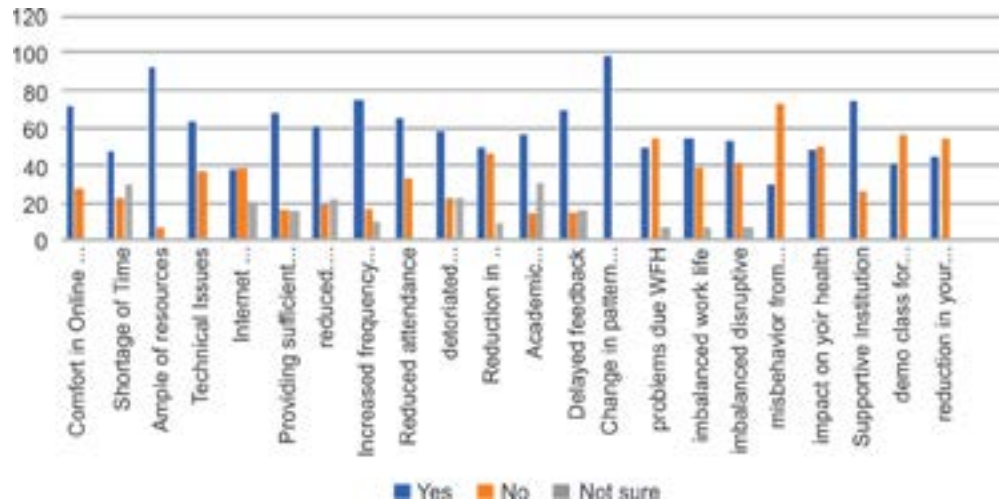


Fig. 2: Graph of Problems (on x axis) versus percentage responses (on y axis)

The study was further extended towards a comparative study where gender, experience and institutional background were taken as the basis. For comparative study between sample of different sexes, problems were mainly focused because of the responses obtained from who were contacted prior to this research work and of the responses available on the Quora platform. A relation was observed in case of issues with time management and problems arising due to work-from-home. Female teachers were found to have more problems in working from home and had an imbalance in their

work life due to these changing situations and also faced a bit more amount of misbehavior from students than the male teachers. Teaching from home also took toll on the health of teachers and thus an observable difference can be seen in case of male and female teachers. A very distinct difference was observed in overcoming of technical issues while handling of hardware and software used to carry out a smooth teaching. This huge difference in the values shows low efficacy of female teachers towards technology. (Figure 3)

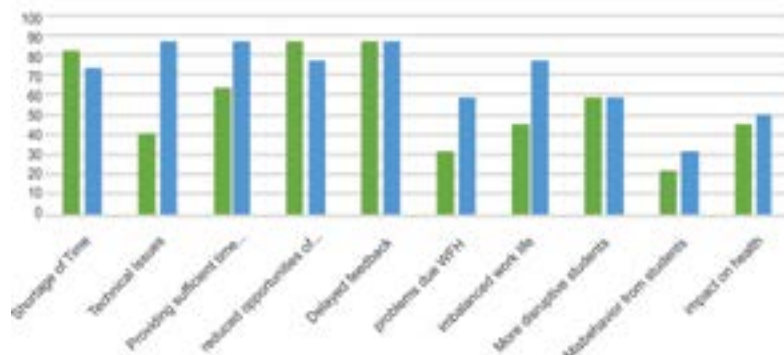


Fig. 3: Problem analysis based on the gender of population of interest

Other comparison between teachers from institutions governed by the state and private schools, the problems mostly arose due to work pressure from higher authorities.

These values are percentage of the teachers out of the 19 Private School teachers and 25 Government School and Inter College Teachers.

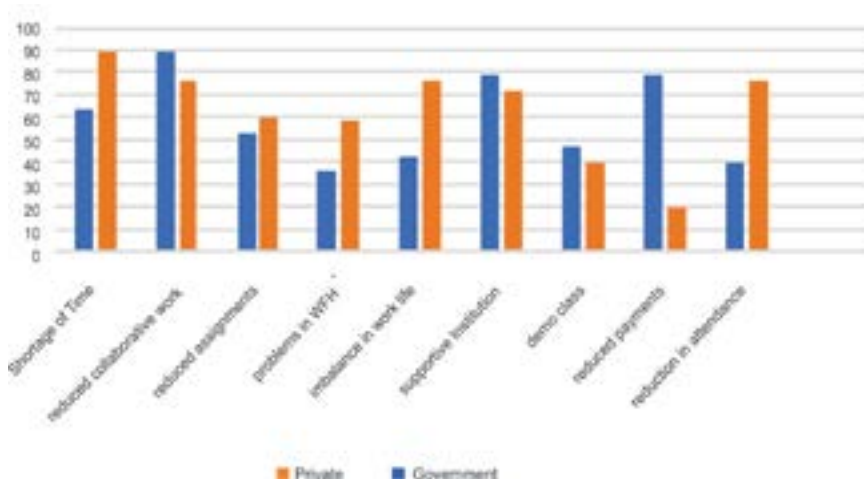


Fig. 4: Analysis of the percentage responses of the respondents belonging to different institutional backgrounds

As expected, comparable differences were observed in case of private and government employees. Due to pressure from the school authorities and targets to achieve the goals on time, private school teachers were found to be more habitual to these deadlines and thus faced lesser problems in working from home and in balancing their work. A very distinct difference in the bars shows reduction in payments of private school employees thus suffering from financial support from their institution. The difference in attendance of students was also very significant as the state government schools were not providing regular online classes and thus observed a reduced attendance than private school students. (Figure 4)

The comparative study was also carried out on the basis of teaching experience. For better distinction and understanding, teachers with experience equal to or less than 15 years, were treated as less experienced whereas the teachers having more than 15 years of experience were treated as more experienced. (Figure 5)

Surprisingly majority of responses to the four mentioned problems were contradictory to the anticipated thoughts. According to the observed results, it is clear that less experienced teachers faced more problems while working from home as compared to the more experienced teachers with similar case in balancing of their work life.

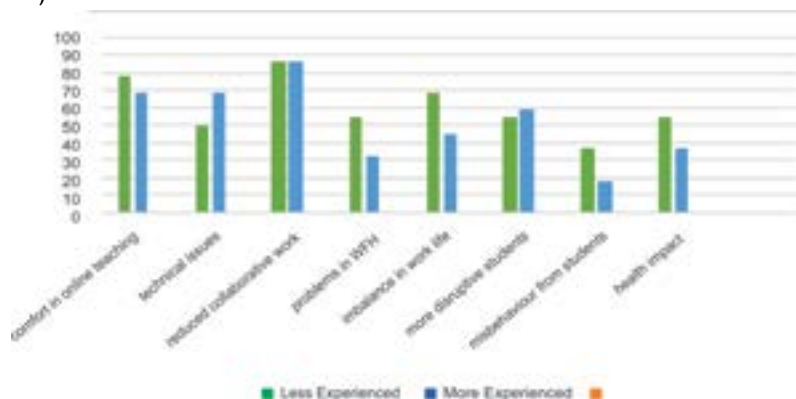


Fig. 5: Analysis of the responses by the teachers with varying teaching experience

From the responses received from these student-teachers, it is clear that even though they had resources to carry out smooth teaching-learning, various other distraction and disruptions made their path more

difficult. Lack of experience and difficulty in adapting to these sudden changes in teaching methodology greatly influenced their function as a teacher.

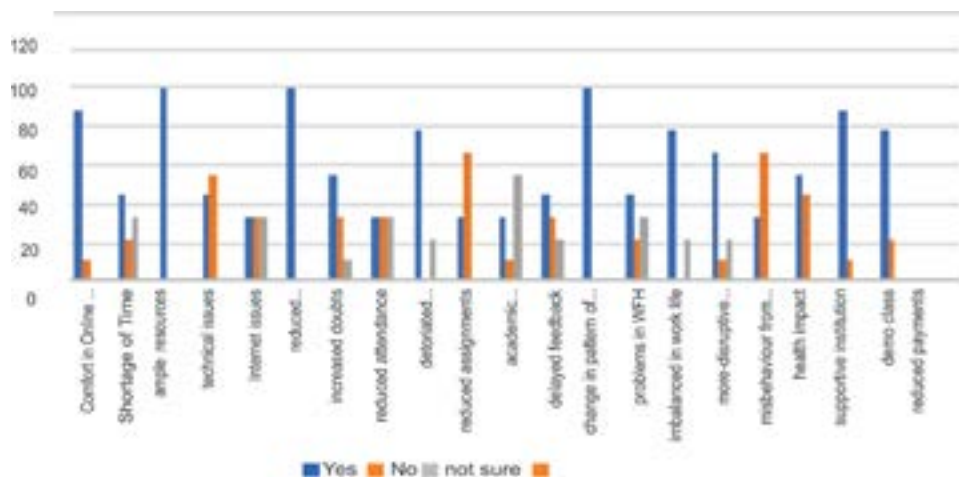


Fig. 6: Responses from pre-service teachers and their percentage to the questions on y axis

Teaching the practical aspect of chemistry posed great problems to the teachers. In theoretical portions developing content viable for online platforms was a difficult task for many as they responded in the survey form and thus the process of remote teaching was delayed. Due to sudden emergence of numerous software, lack of a consistent server and internet breakdown was also observed. Teaching inorganic chemistry was much easier than other disciplines of chemistry. Advanced features available in the installed apps in systems enabled the easy content preparation but writing equations in physical and organic reactions was tedious to many respondents.

Lack of efficient applications for drawing the structure of organic molecules in easy and fast way posed problems to many. A major problem arose for delivering the practical chemistry lessons, as any science discipline without practical knowledge, is incomplete and that too in real life setup — is of utmost importance. Earlier there were also not many resources available for senior secondary practical simulations. So, teachers took help of other existing resources whose details are available below. Many achieved in delivering the content for the practical classes and also encouraged the students and assisted them in using various online platforms. (Figure 7)

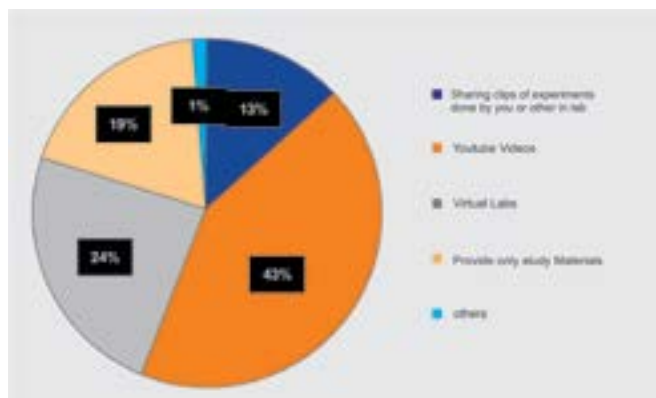


Fig. 7: Pie chart for the extent of use of available mediums for teaching practical chemistry

It is evident that YouTube has been the most accepted and trusted form (43%) used for teaching Practical chemistry, 24 per cent of the teachers have approached the use of virtual lab software signifying the extent of awareness of these advanced technological developments in crating online laboratory application.

The last part of the questionnaire focused on some complaints and problems that students conveyed to their teachers, which in turn affected their teaching-learning process. Students faced non-availability of either mobile phones or laptop all day long or at class hours because of reasons like having siblings or working parents and there are fewer devices in the family. Shortage of internet packs was most common in all families irrespective of their economic status and residential background along with issues of low bandwidth internet thus interrupting the learning. Lack of privacy and silent area affected the learners. Another problem was that students had to overcome various technical issues like problems in logging in, setting of audio and video, settings of chats, insufficient time to express their thoughts and put forth questions while attending online live lectures which caused loss of continuity of interest of learners. Improper time management during class leads to alienation among students.

Conclusions

To revive interest, various tools and methods must be implemented by the teachers like teaching channels (SWAYAM Prabha, NPTEL) sponsored by government, own YouTube channels, sync classes, discussions, textual content matter, alternative assessment methods (tests, quizzes, assignments and projects) and activities in collaboration for better learning outcomes. The teachers need to modify their ways of teaching facilitating active learning by taking help of different activities like modeling, group discussions, animations, etc., to make it more virtual and technology driven. It is also important to understand the technical

aspects like use of digi-boards and learning management system and web technologies which can assist in their pedagogy. It is highly recommended to keep the course more organised by making it well labeled, formatted and accessible as it would lead to likeliness of being more understandable and retainable for the students. Create a FAQ for addressing the questions students commonly have. Teachers must make it compulsive for creating a steady platform where students can collaborate, cooperate and communicate with classmates and ensure active participation of students. Conduction of classes on devices that uses lower bandwidth must be used. Be open and honest with students.

Carry out a survey to allow students to give feedback anonymously during the course.

Make improvements in course structure based on student feedback.

More interactive platforms are needed while teaching and subjective answers evaluation.

Counseling for parents and students are required to realize the significance devices and internet connectivity as parents do not want to invest on internet.

Good app and positive thought process of school, students and government will bring revolution in remote learning.

To create awareness among students about the teaching styles of various institutions is very helpful in improvised teaching learning.

Most perplexing reply was that they have lost the habit of writing on board and feel that this online teaching is not suitable for school students at all. They find this method of teaching-learning very mechanical and wish for immediate revival of traditional method. Among all these, some of the teachers also claimed that they have now been accustomed to this new normal and with gradual passing of time, have excelled themselves in achieving their goals and paved way for learning in this adversity. They believed that with gradual passage of time, they had brought modifications and enhancement in their teaching style and will continue to do so till the end of this new normal.

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Perceptions of students' online learning experience during the Covid-19 pandemic in the state of Nagaland: Are teachers dispensable or indispensable actors in an era of digital education?

Niboli T Awomi*

Abstract

This study examines students' perceptions of the online mode of learning during the Covid-19 pandemic in the state of Nagaland. It also seeks to understand students' perceptions of the role of teachers in their learning process. The sample comprised 80 students, who were pursuing bachelor's programs in the colleges of Nagaland, India. Tools for gathering data include interviews and questionnaires. Data gathered emphasized three aspects of online learning—students' motivation for online learning; students' digital competency; and students' perceptions of the role of teachers in their learning process. One significant finding on the first aspect indicates students' lack of interest and motivation owing to issues such as internet connectivity and the ratio of students to the teacher in the classroom. In the second aspect, it was found that there is a gap between the level of students' expected digital competency and their actual digital competency; and on the roles of teachers, students' perceptions of teachers as mentors necessitate their indispensability in the learning process. The study has implications for a pedagogical discourse for promoting scientific inquiry in pre-service teacher education program.

Introduction

The term 'digitising' is referred to the process of retrieving analogue information and encoding it so that computers can recognise, process, and then transmit it to users (Bloomberg, 2018). And the term 'digitalisation' is understood as "changes associated with the application of digital technology in all aspects of human society". It is also accepted as the "ability to transform existing products or services into digital variants, thus offering advantages over the tangible product" (Parviainen, Tihinen, Kaarian-inen, & Teppola, p.64). In education,

it refers to the use of technology and digital devices, such as, computers, mobile devices, software applications, and any other kinds of digital technology that are used in the process of teaching and learning. It involves converting text, images, audio, and videos into digital formats that can be played by digital devices. Digitalisation tools include devices, such as, computers, smartphones, the internet, projectors, etc. And some of the means of digitalisation in education are online submissions of forms and documents; conducting online classes; taking online tests; sending out online assignments and assessments; giving online presentations;

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sharing digital support materials, and digital publications.

The importance of digitalisation in education is felt to such an extent that Tihinen & Kaariainen, (2016) opined that in the future, digitalisation will be the criterion to determine the existence or the non-existence of Higher Education Institutions (HEIs). Tim Berners-Lee a founding member of the World Wide Web (WWW) believes that the transition of education in the digital scene is a turning point in the history of education. And true to his statement, digitalization in education has brought forth benchmark changes in the education sector.

During the Covid-19 pandemic when schools and colleges in India switched to functioning online, if any teaching and learning were to happen—having access to software applications such as Google-classroom or Zoom—through digital devices became a necessity. In light of this scenario, the study focused on the students' view on three pertinent aspects regarding their perceptions of learning online rather than a traditional face-to-face mode of learning. As such, the aims of the study were to understand the perceptions of students regarding the online mode of learning using digital devices by examining the perceptions of students regarding their level of motivation on learning online; finding students' digital competency; understanding the views of students regarding the role of teachers in their learning process. And depending on the data findings of this study, the discussion on the dispensability or the indispensability of the teacher's role in the teaching-learning process will find its relevance.

Data findings were gathered through an interview or by sending out a questionnaire via email. All questions were formulated with the intention to make students provide an explanation or provide reasons in support of their answers. Findings show interesting insights about the students' views with regard to online learning. In addition, it also shows how students perceive the role of teachers in their learning process.

The phenomenon of digitalisation of education in India

In India, the use of technology in teaching and learning has been a rising phenomenon since the beginning of the 21st century. However, the onset of the Covid-19 pandemic has brought forth an unprecedented surge in the use of technology in the education sector. Its necessity was felt both in rural as well in urban areas. Criteria identified by Basilaia et.al., (2020) for all online teaching and learning platforms during the Covid-19 pandemic were found relevant in the Indian context as well. Some of the criteria are:

- a. student-teacher connectivity through an online interactive session or via a recorded video using digital devices
- b. conducting assessments for students such as, homework, quizzes, presentations, and tests using digital devices.

In such a scenario, there has emerged a conversation about digital technology replacing the traditional physical classroom meeting and the roles of teachers in the teaching and learning process. Today more than ever, the discussion on digitalization in education is viewed both as a pivotal opportunity to bring India to the global education platform as well as a significant means of widening access to educational institutions. Also, a key discussion on this aspect includes mitigating the problem of teacher shortages and thus, taking quality education to every part of India. Since the onset of the Covid-19 pandemic, the Indian HEIs which were earlier restricted from offering more than 20 per cent of the degree online have now lifted that restriction. And the New Education Policy (2019) emphasises both digitising and digitalisation of education. It also talks about furthering the scope of education technology (EdTech) for inclusive and quality education to reach every part of India.

Thus, digitalisation in education is seen as an important means to improve and augment the teaching-learning process. And the Covid-19 pandemic has led to the

accelerated growth of acceptance of EdTech as part of mainstream education in India. Taking the cue, many EdTech companies and online portals have come up to impact e-learning for all sections of learners. And this transition in the education sector has brought forward the conversation that the line between traditional learning and EdTech will likely get blurred as the new normal in the post-pandemic world. Keeping this importance of e-learning in mind, the study aims to accentuate the ground reality by seeking to understand the perceptions of students towards online learning.

Methodology

The objective of the study was to understand the perceptions of students about the digital mode of learning. And using this finding as the basis, find out the relevance of the role of teachers in the teaching-learning process in this digital era. Tools used to collect data include interviews and questionnaires. Therefore, the researcher has adopted a qualitative approach to data analysis and interpretation.

Participants

The sample comprised 80 students who were pursuing a bachelor's program in the colleges in Nagaland, India. There were 50 female students and 30 male students, in the age group between 18-25 years. Their fields of specialisation were divided between humanities and science. However, the majority of the students belonged to the humanities discipline i.e., 71 out of the total 80 students.

Instrument

Data were collected through interviews or by sending out a questionnaire via email. Questions were formulated to understand the perceptions of students with regard to the three pertinent aspects of online learning during the Covid-19 pandemic. Those three aspects were: students' motivation and

attitude towards an online mode of learning; students' digital competency; and students' perceptions of the role of teachers in their learning process.

And data on these aspects were gathered by asking them the following questions:

- a. On the motivation for and attitude towards an online mode of learning—questions on this aspect were based on their perceptions such as their interest and their experience of learning online during the pandemic. Questions asked included: how was your experience of attending online classes during the Covid-19 pandemic? Was it motivating to experience online learning?; in what ways did attending classes on Zoom or Google-meet during the Covid-19 pandemic help or hinder your learning process? Please explain. According to you, which mode of learning was more beneficial, online or face-to-face? Please provide reasons in support of your answers; on a scale of 1 to 5, 1 being the lowest and 5 being the highest, how much would you rate the level of your satisfaction with attending online classes? Please provide reasons for your answer.
- b. On students' digital competency—questions asked were: how often did you use digital devices as learning aids in your face-to-face classes prior to the pandemic? What digital device(s) did you use to attend the online classes? How often do you use digital devices such as laptops, desktops, tablets, etc., in your day-to-day life? On a scale of 1 to 5, 1 being the lowest and 5 being the highest, how comfortable are you with using digital devices as learning aids?
- c. On the roles of teachers—students were asked questions, such as, according to you, what are the roles of students and teachers in the classroom? Was there any difference in the roles of your teachers and you as a student when classes were conducted online rather than face-to-face? How? According to you, what roles do teachers play in your learning process

and in your performance; do you agree that having subject matter knowledge is a sufficient criterion to indicate a teacher's teaching efficiency? Please provide reasons in support of your answer; in this digital age, how important do you think are the roles of teachers? Kindly elaborate.

Procedure

The researcher intended to meet as many students as possible and conduct an interview, however, owing to circumstantial inconvenience, some of the students opted to participate in the study by responding via a questionnaire. Participants were assured of their anonymity and of the use of data only for the purpose of this study.

Data analysis

The data collected were analysed qualitatively with an inductive approach i.e., without any preconceived notions. The study did not attempt to formulate or test any hypothesis but rather attempt to investigate and describe the study according to the emergent themes. Creswell's Data Analysis Spiral (2007) was followed as the framework for this study. The first step was collecting data from the respondents, and then transcribing the data into specific folders. The second step involved careful consideration of the specified folders and taking notes of the emergent ideas. Then, the third step was classifying the emergent ideas thematically. It was followed by developing and assessing interpretations i.e., considering what is meaningful in the categories and themes gathered by analysis (Patton, 2010). To ensure validity and reliability, Conway et.al., (1995) suggested one-to-one interviews with standardised questions as an intervention to ensure the highest reliability, the same was adopted in this study. Here, it is pertinent to mention that this study followed a qualitative approach rather than a quantitative one, as it was important to understand the

respondents' personal views on questions. The quantitative nature of the study mostly adheres to close-ended questions that restrict the respondents from giving their personal views. Thus, the questions formulated for this study were predominantly open-ended with enough scope for the respondents to express their views.

Findings

The following sections will present the data findings and the research interpretation as gathered from the students:

- a. students' motivation for attending online classes—responses to these questions showed that students were less motivated to attend online classes. The gathered data revealed that students were demotivated because of barriers such as internet access and connectivity issues; lack of good digital devices; and inability to have their doubts cleared on time. Another finding on this aspect was that the majority of the students found online learning put more burden on them. Unlike meeting in physical classrooms, having online classes made it difficult for students to have interactions as they had to log out as soon as the session was over. It also made it difficult to complete the syllabus on time, which added more pressure on the students in their preparation. Moreover, students were of the opinion that having large numbers of students in online classes adds to the inefficiency of the learning process, they had less opportunity to clarify their doubts or have discussions with their teachers and their peers. And all of these factors combined made students less motivated on attending online classes. Also, the data gathered showed that most of the students rated between 1.5-2 out of 5, when asked to rate their level of satisfaction with attending classes online. And the most common reasons they cited for their low level of satisfaction were—learning was more stressful as they had to

manage most of the topics in the syllabus by themselves; lack of confidence in their preparation for the exam; and not having easy access to the materials and help they needed from their teachers and friends. Some sample responses on this aspect are shown below—

Face-to-face is better any day. We had issues with online classes every day due to bad network, noise, and connection problems, so it was very discouraging.

Another student commented — *Online classes were very difficult for all of us due to network issues and there was no time to ask questions or [clarify] doubts. I will rate my level of satisfaction as 2 out of 5.*

Another student responded — *We have more than 60 students in our class and many of us faced network problem, so we could not finish our syllabus and we had to study by ourselves. Finding study materials and books was also difficult for us during online classes. Online classes are not very helpful, my rating is 1.5 out of 5.*

As it is very clearly stated in the above statements, students preferred meeting in physical classrooms rather than attending online classes. Their attitudes towards online learning exhibit a lack of motivation and a heightened level of stress.

b. On students' digital competency—students' responses to questions on this aspect showed that most of them (85 %) never used digital devices as learning aids when classes were conducted face-to-face. The majority of them (65 %) also responded that they rarely used digital devices such as laptops and desktops in their usual life activities. Taking a cue from these data suggests a gap between the level of students' expected digital skills and their actual digital skills. Another data that points towards this gap was obtained from responses to a question that asked students to rate their level of comfort in using digital devices as learning aids. More than 50 per cent of students gave a rating between 1 to 2.5

out of 5, and only seven students gave a rating of 4.5 out of 5. One of the students responded—

I don't have a laptop and we don't have computer class in our college, so my level of comfort is 1 to 2 out of 5.

c. On the role of teachers in the teaching-learning process—data gathered on this aspect showed that students have high regard for their teachers as mentors and facilitators in their learning process. An important factor that emerged on this aspect was that students responded on the same line of thought that being an expert in a subject matter alone is not a sufficient criterion to indicate a teacher's teaching efficiency. On the other hand, an efficient teacher is one who has both the knowledge and the skills to teach and also understand the classroom dynamics and create a conducive environment to facilitate students' learning. Here it must be noted that students' perceptions of the role of teachers in their learning process were not limited to imparting knowledge, but that they also had the understanding that their teachers are the ones who motivate them and lead them to both social and educational development. As one of the students responded—

teachers are our mentors, they guide us not only in our studies, but they also impart to us other values and responsibilities. I think, they play a huge role in our performance thorough clearing our doubts and also motivating us in a lot of ways.

Responses gathered also showed that for the majority of the students (80 %) a sense of confidence in their preparation and performance comes through having interactions and discussions with their teachers. Also, all students commended in affirmative about the need for classroom discussions. They stated that having discussions helped them in clearing their doubts and also give them a sense of belongingness and participation in the classroom. As one of the students responded—

Yes! I think classroom discussions are important. When you have discussions, it helps in clearing our doubts, we get to participate in the discussion and feel more prepared.

Implication

It can be inferred from student respondents' perceptions, that for any successful learning to happen, it calls for students' willingness and motivation. What it found needs to create a positive online learning experience is knowledge about the target students i.e., their context in terms of geographic location, their academic background, and their technical skills. Also, there was also a need to provide technical and academic support to students and to boost their interest and participation in the learning process; it is essential to have meaningful learning activities where they feel engaged and motivated. Moreover, one of the pertinent findings from this study indicates that teachers have a paramount role in facilitating the teaching-learning process; whether teaching is done face-to-face or online, the need for effective teachers can never be overemphasised. Therefore, another important measure is to ensure that teachers are not only subject matter experts but also possess skills to facilitate students' optimal learning whether classes are conducted face-to-face or online.

Limitation

This study is limited to students in the state of Nagaland. And therefore, the difference in

context in terms of geographic location and administration; the difference in relevance in terms of issues with internet connectivity and access; and the difference in viability in terms of the state-of-the-art facilities and the technical know-how of different stakeholders in the education sectors, may not find its relevance for context that is different from that of the sample students.

Conclusion

The Covid-19 pandemic brought an unprecedented situation to all aspects of our lives, and the education sector has been no exception; such circumstances created a phenomenon of emergency e-learning for students. And in this context, the study was conducted to understand the perception of students' online learning during the pandemic situation. It also seeks to find out what students perceive of the roles that teachers play in the teaching-learning process. Data were collected through interviews and by sending out questionnaires. Findings show that owing to many technical and personal challenges, students preferred face-to-face mode of learning to online classes. Although technology and its uses are here to stay, it is apparent that the need to focus on human development can never be substituted. The data gathered also revealed that students think of their teachers as mentors who are irreplaceable not just in their learning process but also in their overall growth and development.

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Appendix 1

Questions

1. Which course are you pursuing?
 - a. Bachelors
 - b. Masters
2. How were your classes conducted during the Covid-19 pandemic?
 - a. Face-to-face
 - b. Online
 - c. Both
3. Prior to the Covid-19 pandemic, did you have any experience with an online mode of learning?
 - a. Yes
 - b. No
4. Which digital device(s) did you use to attend your classes online? (Tick the options that you used).
 - a. Smartphone
 - b. Laptop
 - c. Tablet
 - d. Desktop
 - e. Others (Please specify)
5. Did you or did you not have the option to choose the digital devices for your online classes? (For example, an option between using a smartphone rather than a laptop, kindly specify what options were available for you).
6. How often did you use digital devices as learning aids in your face-to-face classes?
 - a. Always
 - b. Sometimes
 - c. Rarely
 - d. Never
7. How often did your teachers use digital devices as teaching aids in face-to-face classes?
 - a. Always
 - b. Sometimes
 - c. Rarely
 - d. Never
8. According to you, which mode of learning is more beneficial (online or face-to-face)? Please provide reasons in support of your answer.
9. How often do you use digital devices such as, laptops, desktops, tablets, etc. in your day-to-day life?
 - a. Always

- b. Often
 - c. Sometimes
 - d. Rarely
10. On a scale of 1 to 5, 1 being the lowest and 5 being the highest, how comfortable are you with using digital devices as learning aids?
 11. How was your experience of joining classes online during the Covid-19 pandemic? In what ways did attending classes on Zoom or Google-meet help or hinder your learning? Please explain.
 12. On a scale of 1 to 5, 1 being the lowest and 5 being the highest, how much would you rate the level of your satisfaction with attending online classes? Please provide reasons for your answer.
 13. According to you, what are the roles of students and teachers in the classroom?
 14. According to you, was there any difference in the roles of your teachers and you as a student when classes were conducted online rather than face-to-face? How?
 15. Do you think there is a need for discussion between teachers and students in the classroom? Why?
 16. According to you, what roles do teachers play in your learning process and in your performance?
 17. Do you agree that having subject matter knowledge is a sufficient criterion to indicate a teacher's teaching efficiency? Please provide reasons in support of your answer.
 18. In this digital age, how important do you think are the roles of teachers? Kindly elaborate.

Awareness of Health, Hygiene, and Sanitation among the Elementary School Teachers and Students: A Post Covid Status Survey

Nutan Pandey*

Abstract

World-wide hundreds of millions of people have passed through and are still passing through the detrimental effects of Covid-19 pandemic. The outbreak of Covid-19 has taught us how dangerous squalid living conditions are for human life as they can kill, make us sick and make our lives miserable. Better healthcare can treat the symptoms but not be the cause of ill health. Personal hygiene and sanitation is recognized as the number-one way by which people can lower the risks of many diseases. School is the place where children spend most of their time and have a chance to learn about health, hygiene and sanitation. Whatever children learn in school, they directly impart in their families and possibly will disseminate in their upcoming generation as well. Here the roles of the teachers are central as their level of mindfulness will certainly determine the level of alertness amongst students. The study discussed through this research paper assessed the level awareness regarding health, hygiene and sanitation among the elementary teachers and students of three different boards i.e., CBSE, ICSE, U.P. of Lucknow city, post Covid-19 reopening of schools. The main intention behind this study was to gather the information, whether or not we have taken any lesson after the peril. It was a descriptive study involving a purposive sample of 09 teachers and 90 students. Results highlighted that our current citizens are not at all prepared to fight against any health-related risk outbreak even post Covid-19.

Keywords: Health, Hygiene, Sanitation, elementary schools.

Introduction

Covid-19 is still there. There isn't any single day when the world is not registering new cases and deaths. As per WHO (2022), COVID-19 is the disease caused by a new coronavirus called SARS-CoV-2. WHO first learned of this new virus on 31 December 2019. WHO (2022), globally, as of 5 May 2022, 6:37pm CEST, there have been 513,384,685 confirmed cases of COVID-19, including 6,246,828 deaths. Safe and effective vaccines are a game-changing

tool: but for the foreseeable future we must keep wearing masks, cleaning our hands, guaranteeing good ventilation indoors, physical distancing and avoiding crowds.

Schools

School is a place which not only provides education to children but also a learning environment. After stepping out from the house, it plays a crucial role in the development of a child. Schools have a central role in the community, whatever children

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learn here they apply it in their lives and transfer it to each one they come in contact with, like parents, siblings, and neighbours. Here the responsibility of the school increases as they are directly responsible for bringing out the desirable changes. During the Covid 19 outbreak, schools remained closed for a significant period, and a lot of academic loss has been registered. While we are recording new cases, we can't keep schools closed forever. So schools all over the world have started opening, keeping in mind a new model of education. A decision to reopen schools in every country and area has been made based on careful assessment of the situation, with consensus among all the key parties involved, including the health and education policy-makers, teachers and other school staff, parents and health and community workers. In addition, reopening of schools is carefully planned and prepared, with all necessary measures in place to protect the safety and health of everyone in the school community.

As per WHO (2022), areas where SARS-CoV-2 is spreading, children aged between 6-11 years are suggested to wear a well-fitted mask. A safe environment should be shaped for children who are not able to wear mask due to some reason or the other. There are certain things which should be kept in priority lists by the school which includes sanitizers, soaps, dustbins for proper disposals of masks, cleanliness around and within the school premises, students and teachers and staff should always follow physical distancing measures, staying at least one metre from another person; performing hand hygiene by washing hands frequently with soap and water or using alcohol-based hand rub; following good respiratory hygiene by covering mouth and nose with bent elbow or tissue when coughing or sneezing; avoiding touching eyes, nose and mouth; and avoiding crowded places.

Through this research paper, the researcher has tried to give the real post covid-19 readiness of schools with respect to hygiene and sanitation as per the points mentioned in the above paragraph.

Significance of the Study

The purpose of the study is to assess teachers' and students' post covid-19 knowledge and attitude regarding health, hygiene and sanitation as well as to suggest a road map towards strengthening the current status on other hand.

Objectives of the Study

To study the status of health, hygiene and sanitation awareness in elementary schools in Lucknow city with reference—

- a) to study the hygiene awareness among teachers and students,
- b) to study the awareness of sanitation among teachers and students.

Delimitation

Only 03 elementary schools i.e., one each from CBSE board, ICSE board and U.P board was selected for the study.

Only 90 students i.e., 10 students each from Classes VI, VII and VIII, from each board have been taken for the study.

Only 9 teachers i.e., 3 from each board have been taken for the study.

Methodology

As the researchers seek detailed description of existing condition and status of hygiene and sanitation conditions in elementary schools, Descriptive method was used in the study.

Population

As the study was delimited to CBSE, ICSE, U.P Board—all the students studying in the elementary schools of CBSE board, ICSE board, U.P board and all the teachers teaching in the elementary schools of CBSE board, ICSE board, U.P board was the population of the study. The schools of urban Lucknow i.e. population of Lucknow city was selected, as it was expected that students of city get more exposed of towards various health, hygiene and sanitation related schemes,

drives and awareness programmes. Also, it is anticipated that teachers and parents of students of urban area would carry more sensitivity, mindfulness and alertness as they know that various options of several resources are available which are helpful in maintaining health, hygiene and sanitation condition.

Sample

Keeping in mind the syllabus, curriculum, content in books, surrounding, socio-economic background, parent's qualification and administration of all the three boards' schools are different which in return make teachers to transact different information, facts and figures amongst the students. So the researcher found it important to include all the three boards in the study. Only 90 students i.e. 30 (10 from Class VI, 10 from Class VII and 10 from Class VIII) from each school and only 09 teachers (three from each school) have been taken for the study.

Sampling

Purposive sampling method was used for selecting the school as the researcher was interested in linking the effect of family background (parents qualification, socio-economic background) and school background (boards, private school/government school) on health, hygiene and sanitation condition. Simple random sampling has been adopted for selecting the students of Classes VI, VII, VIII. Specifically Classes VI, VII, and VIII were selected as students of these classes. They have by now reached at the understanding level; they don't merely work based on the rote memorisation or being directed by others.

Tools

Swacch Vidyalaya initiative (2014) assessed that over 410,000 toilets would need to be constructed or repaired to ensure that every child has access to toilet. Vivas, A. (2011) conducted a study, where he found knowledge of proper hygiene were more likely to have

clean cloths, clean nails, time to time hand washing, garbage in bin and to have lower risk of parasitic infection. This cross-sectional study comprised of 669 students who were interviewed by trained staff. Participants were in Grades 1-6 at Angolela Primary School, located in rural Ethiopia. Data consisted of hygiene and hand washing practices, knowledge about sanitation, personal hygiene characteristics, and presence of gastrointestinal parasitic infection. Hutton, G. & Chase (2016) conducted the study on the knowledge base for achieving the sustainable development goal target on water supply, drinking water, sanitation of surrounding, impact of poor WASH and covering health, social, environmental and economic aspects, costs and socioeconomic returns. Srivastav, S. (2013) reviewed various government programs like *Sarv Shiksha Abhiyan*, *Nirmal Bharat Abhiyaan*, school sanitation and hygiene education program.

As the researcher had to collect data keeping in mind the post-Covid-19 condition of teachers and students, she was unable to find any relevant tools. The researcher herself developed the questionnaire, SWOC sheet and observation sheet. Due to the unavailability of any post-Covid-19 tools, only the content validity of the questionnaire was done.

1. Questionnaire for the collection of data from the students.

Development of the questionnaire: The Researcher selected three dimensions i.e. health, hygiene and sanitation. Initially 50 questions were framed, almost equal in number for each dimension.

Content validity of the questionnaire was done with the help five experts. Only 36 questions were left after removing some of the items and improving the language. A few questions were added as well as per the suggestions of the experts

Scoring: All the 36 questions were compulsory. Answer was in "YES" and "NO". One mark was awarded for every correct answer. Personal profile, list of instructions were given on the front page.

2. SWOC sheet for the collection of data from teachers: A teacher response sheet was made for the introspection and reflection on the basis of four aspects where:

“S” stands for “Strengths” i.e. unique capabilities and means in regard with Health, Hygiene and Sanitation.

“W” stands for “Weaknesses” i.e. weakness in terms of Health, Hygiene and Sanitation.

“O” Stands for “opportunities” i.e. conditions may positively impact in relation with Health, Hygiene and Sanitation.

“C” stands for “Challenges” i.e. what

conditions may negatively impact in terms of Health, Hygiene and Sanitation.

3. Observation sheet: to be filled by the researcher.

An observation sheet consisting of 10 checklist items based on the three dimensions, i.e., health, hygiene, sanitation was filled by the researcher. On the basis of the researcher’s critical observation, YES or No was marked on the sheet.

Interpretation of the Score

Interpretation of the scores according to the responses given by the subject.

Table 1: Student’s response in percentage.

Name of the Board	Class	Health	Hygiene	Sanitation
CBSE	VI	38.8	45.0	71.6
CBSE	VII	39.0	77.7	73.3
CBSE	VIII	40.8	79.0	75.0
ICSE	VI	45.0	61.6	55.0
ICSE	VII	64.0	69.0	59.0
ICSE	VIII	63.0	68.2	61.0
U.P	VI	25.8	41.6	55.0
U.P	VII	35.8	46.1	50.0
U.P	VIII	35.8	57.5	57.5

Awareness of Hygiene among the students of same class level of different schools

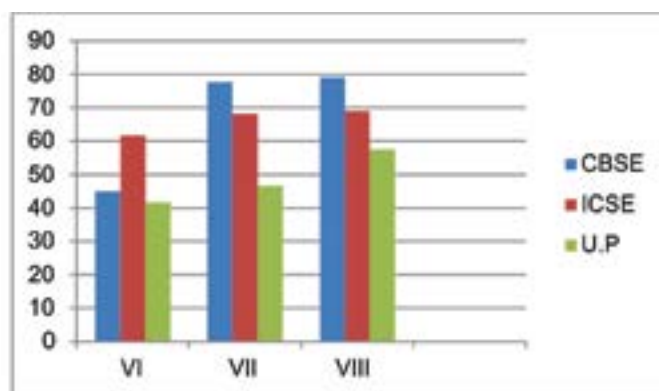


Figure 1: Comparisons of hygiene-level related awareness amongst the students of Classes VI, VII, VIII of CBSE, ICSE, and U.P. board students.

Considering the graph it is found that the awareness level of CBSE and ICSE board students were better. In both the schools teachers were paying attention towards washing hands before eating, regular sensitization of hands, not rubbing hands around nose, sneezing and coughing with covering nose. It has been found in these two schools student-teacher ratio was appropriate, so the teachers were not over-burdened with work. Also, students were coming from good socio-economic

background which is allowing them to understand and follow things easily.

U.P board school was a government school, teachers were overburdened with work, and they were not able to give much time on talking and reflecting about the importance of hygiene. Also students from lower middle strata of the society do come to this school, their family members are not literate and particularly have poor knowledge about the personal hygiene.

Awareness of sanitation among the students of same level of classes of different schools

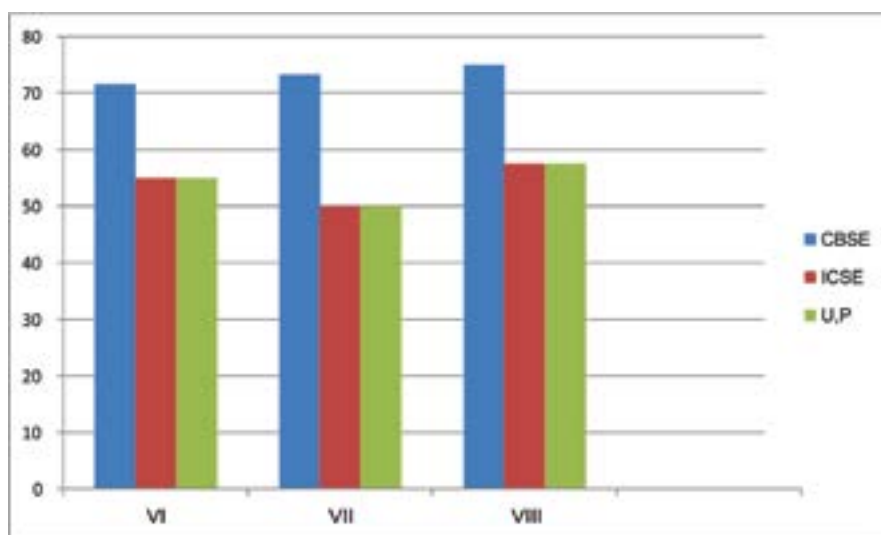


Figure 2: Comparisons of level sanitation-related awareness amongst the students of class VI, VII, VIII of CBSE, ICSE, U.P board students.

When it comes to comparing the same classes of different schools, it was found that CBSE board school students keeps good and updated knowledge regarding sanitation conditions. CBSE board school (is being run by Army welfare educational society), which is equipped with all the necessary equipment's required for keeping the campus clean like a good number of dustbins with lids and wheels are kept. When it comes to ICSE board school, though it is a famous

private school, situated in the main Lucknow city, in congested space, sanitation conditions in the school were not at par. In U.P board, the school condition was poor: dustbins were broken, dingy toilets, and taps were not in working condition and algae was blooming in the toilet and walls of the class room.

In all the three schools no soaps dispensers, no sanitizer were kept anywhere.

Based on the SWOC Results

Teacher's awareness regarding health, hygiene and sanitation in

CBSE Board Schools Teachers have mentioned points like availability of clean drinking water, well-furnished toilets, regular sweeping of class rooms as the strength of school.

Water stagnation near the parking area and irregularity in drinking water supply as the weakness in school campus. Stagnation of water can cause the breeding of mosquitos and irregular water supply may lead to many unhygienic situations. These points show that teachers are well aware of elements required for health, hygiene and sanitation condition. But none of them mentioned any innovative method of teaching which is helpful in developing these values which will be required fighting battle against breakthrough like Covid 19.

ICSE Board Schools Dustbin with lids in wash room, soap dispensers in washrooms, regular cleanliness of toiles, functional aqua guard water coolers and hygienic check on daily basis were points given as strength of the school. But the ground reality was different; in observation by the researcher many things mentioned by the teachers were not in the working conditions.

Frequently irregular supply of water, irregularity in cleaning dustbins, less emphasis on water cooler cleaning were the weakness of ICSE board school.

Availability of lots of junk food and poor maintenance of canteen were the challenges mentioned by teachers.

None of them provided any information regarding the things which can help in fighting against Covid 19.

U.P Board Schools

Out of all the three teachers' one could not write any relevant point in the sheet, which shows her own lack of awareness on the topic.

Other teachers mentioned the big ventilated class rooms as the strength.

Unavailability of proper hand washing facilities near the wash room, poor maintenance of toilets as the weakness.

Again nothing specifically was mentioned for Covid-19 prevention.

Researcher in her observation found that: CBSE board schools

Had separate toilets for boys and girls.

Proper attention for cleanliness of toilets was given.

Separate dustbin for sanitary napkins was present in girl's toilet.

Taps were in working condition, but no soap dispenser was there.

Nothing was dedicated on the name of preventing covid-19 spread.

ICSE Board Schools

Had separate toilets for boys and girls.

Sufficient number of taps were present but water was not coming from every points

Soap dispensers without soaps were kept there.

U.P Board Schools

Had toilets without doors

No proper water supply

No separate toilet for boys and girls even the staff members were sharing the same toilet

No dustbins were present, not in the toilet and not in the school premises as well

Taps were broken and leaking

Water supply wasn't proper; no provision of keeping soap or hand wash was present.

Findings Only 49.2 per cent of Class VI, 64.2 per cent of Class VII, and 68.2 per cent of Class VIII students of all the three schools acquired awareness regarding hygiene at elementary level which is insupportable, and only 60.5 per cent of Class VI, 60.7 per cent of Class VII, and 64.5 per cent of Class VIII students of all the three boards

acquired awareness regarding sanitation at elementary level, but many of those who do have knowledge about various diseases and disease causing agents are not practicing hygiene and sanitation.

88.96 per cent of students have mentioned their fondness for junk foods over healthy food items, which in return may weaken their immunity and lead towards obesity and many life threatening disease.

Only 19.23 per cent of students of all the three boards practice yoga; it was observed on ground that many of the students were over-weight and obese.

7 out of 9 teachers mentioned they were overburdened with tasks other than academics, which in turn mount pressure of course completion within a very short period of time. More emphasis is being given on the preparation of the facts for examination but not on acquiring useful knowledge and skills. Teachers are not getting appropriate time to establish link between health, hygiene and sanitation.

37 per cent of students whose both parents were working acquire good knowledge regarding healthcare. Students who have good socio-economic background, practice hygienic habits and are more aware regarding sanitation practices and students who do come from lower economic strata have less knowledge regarding health, hygiene and sanitation.

CBSE and ICSE School had facilities regarding hygiene and sanitation but U.P board's schools were in pathetic condition in terms of basic cleanliness and facilities.

Study indicates that in all the three schools, students and teachers were not aware of various health, hygiene and sanitation programmes being run by the government.

Suggestions

NCERT has recommended "Health, Yoga and Physical Education" paper in Semester IV of B.Ed. Programme. Every university across the country should include this paper

while designing syllabus for B.Ed. so that pre-service teachers can inculcate a sense of importance of linking and disseminating information on Health, Hygiene and sanitation amongst students and society.

Suggestions for Students Students should apply various health, hygiene and sanitation concepts in real life.

They should wash their hands before eating food, after using toilets and touching animals.

They should carry homemade food and water bottles, avoid junk food.

They should carry and use their own sanitizer.

They should flush toilets after using it in school, home and public places.

They should use dustbins for proper disposal of waste.

They should discuss various concepts they have learnt in school with their family members.

They should sneeze or cough with their mouth covered.

They should refrain from coming to school or going out to public places in case they develop symptoms for Covid or any other communicable disease.

They should learn their social responsibility.

Suggestions for School There should be activities related to health like yoga, sports, and exercises for students as well as teachers.

- Sufficient, accessible, private, secure, clean and culturally appropriate toilets should be provided for school children and staff.
- Sufficient water supply should be available at all time for drinking and personal hygiene, cleaning when required.
- Guidelines should be placed appropriately and should be followed daily by students, teachers and other staff members.

- Proper arrangements should be made for providing primary care, in case someone develops symptoms while in the school premises, at the same time controlling the spread of it to others.

Suggestions for teachers Teachers should plan and organize co-curricular activities related to health, hygiene and sanitation and should ensure maximum participation.

- Teachers should take sessions for parents to make them aware of healthy and hygienic habits.
- In-service training for teachers

should be provided for updating them with changing scenario.

- Teachers should be vigilant to spot children showing any sign of the disease.
- Teachers should make sure that students are adhering to the various guidelines regarding personal grooming, hygiene and sanitation.

Conclusion

A lot of changes are required at the school level in order to spread awareness among the teachers and students otherwise wave after wave of disease like Covid 19 will keep on coming, and we will leave with no option, except of losing lives of our dear and near ones.

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Map Skills of Secondary Students in Relation to their Gender, Locality, and School type

Nawaz Sarif*

Abstract

The study of maps is an integral component of the West Bengal Board of Secondary Education syllabus (WBBSE). Study of maps is crucial as it stimulates students to expand their spatial understandings of physical and human landscapes on the earth's surface. This study investigated differences if any in the level of students' map skills in terms of their gender, locality, and school type. A descriptive research design was used, where data was collected using a self-developed testing tool from three hundred school students in Malda. Analysis techniques, such as frequency, mean, and an independent sample t-test were operated to test the constructed hypotheses using the IBM SPSS v22 software. Results of the study revealed that overall, students had a higher level of map skills. It showed a significant difference in map skills of male versus female, rural versus urban, and between government and private school students ($p < .05$). It was observed that male students (Mean = 25.07; SD = 3.95) had a higher level of map skills compared to female students (Mean = 19.78; SD = 5.17). Similarly, the students from urban schools (Mean = 23.76; SD = 4.46) and those from private schools (Mean = 26.19; SD = 3.140) had secured a higher level of map skills compared to rural school students (Mean = 20.88; SD = 5.86) and those from government schools (Mean = 18.97; SD = 4.415), respectively.

Keywords: cartography, geography education, map reading, school management,

Introduction

The concept of map is comprehensive, and etymologically, the term 'Map' is derived from the Latin word 'Mappa', which means 'Cloth'. It is a graphic representation of our earth as a whole or a segment of it on a plane surface, including paper, cloth, plastic, cardboard, etc., with definite scale, directions, signs, and symbols (NCERT, 2006). Teaching map skills at school levels is closely associated with the teaching of geography. It is said that geography is the only discipline of social studies that gives overwhelming emphasis

on the study of map skills for school-going students (Harvey, 1969; Dikshit, 2004; Sarkar, 2009). The study of geography and map skills is so closely tied since time immemorial that no other discipline of social sciences does (Hartshorne, 1959; Husain, 2011). In the present study, the author has sought to determine map skills among school students in the state of West Bengal, where teaching maps is a part of the instructional curriculums of the West Bengal Board of Secondary Education syllabus (WBBSE). In the state, teaching map skills has a different status quo. At schools, students

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are being taught different skills with the parallel teaching of geography. There is no separate paper or subject for developing map reading abilities in the state of West Bengal; nevertheless, it is included as an inseparable part of the geography syllabus, and there is a separate class for teaching map skills under 'practical geography'. Teaching maps in schools of West Bengal aims to develop students' understanding of the physical as well as human landscapes on the earth's surface. It also aims to enhance students' spatial perception and helps them to learn socio-cultural and physical landscapes quickly. Students of the West Bengal Board of School Education (WBBSE) are taught maps in separate class, and they are empowered with different map skills, including, map reading, directions, map languages, etc. with topographic sheets and physical and political maps of India.

Maps represent layers of information about physical landscapes, such as reliefs, rivers, climate, and natural vegetation and human features, such as settlements, population distribution, transport networks, geo-political boundaries, economic zones, etc. (Khullar, 2011). Maps provide a geographic description that aids in the understanding of cause-and-effect links between various phenomena (Winn, 1991). Furthermore, it was evidenced that maps can be used by students to solve problems in their day-to-day life (Gökçe, 2015). It can also be utilised in social studies and sciences as a learning tool. Students can acquire spatial and rational thinking about the variable features and phenomena on the earth's surface by improving their map reading abilities. Students can utilise maps for a better understanding of geopolitical regions, boundaries, socio-cultural diversities, and historic events (Chiodo, 1997; Birbili, 2006; Liben, 2001; Kiliç, 2011; Atit et al., 2016; Gupta, 2018). Henceforth, the implications of maps in the learning-related text become essential for developing spatial perception and geographical understanding in school-going students (Verdi & Kulhavy, 2002).

Furthermore, students' ability to use maps also affects their learning styles and academic achievements (van Dijk et al., 1994; Wiegand, 2006; Kiliç, 2011).

Notwithstanding, the review of literature showed a lack of substantial research efforts in India to understand map skills among school students and evidenced a discrepancy in students' levels of map skills in relation to their demographic characteristics, such as gender, locale, school types, family socio-economic status, school physical infrastructure (Gilmartin & Patton, 1984; Beatty & Tröster, 1987; Herman et al., 1988; Henrie et al., 1997; Bednarz et al., 2006; Moon et al., 2016). Further, it was found that students had limited opportunities to develop map-reading abilities at schools. The lack of instructional programs and physical infrastructures at schools has been restraining students from developing map skills (Bathurst, 1961; Muir, 1985; Bednarz et al., 2006; Gökçe, 2015; Bugdayci et al., 2017). Despite, few initiatives and steps taken by public and private schools, there are enormous inertias and handicaps resulted into disparities in performance outcomes, due to variation in provided physical facilities, teaching-learning process, teacher-student ratio, and institutional climate (Adika & Adika, 2013; Adeyemi, 2014; Okon & Archibong, 2015; Anandharaja et al., 2016; Aransi, 2018).

Furthermore, students' learning outcomes are also influenced by locality, i.e., rural vs. urban. The review of literature revealed that students in rural areas lack access to quality education, modern exposures, and a healthy learning environment while, on the flip side, students in urban schools have access to the required educational facilities, support, necessary exposures, and learning settings (Young, 1998; Igbo et al., 2015; Nnenna & Adukwu, 2018; Onoyase, 2015). Additionally, the problem like gender-based unequal treatments, including lack of socio-emotional support for girls' education still is a concerning issue among academics, which results in discrepancies in students' learning

performance (Adika, & Adika, 2013; Parveen et al., 2013; Anandharaja et al., 2016).

Thus, in the light of the aforesaid observations, where a dearth of substantial research studies was found and evidence the possible implications of students' demographic characteristics on their learning outcomes, that yet to be generalized to a large target population, a study of students' map skills accomplishments and determining if there is a difference in relation to their gender, locality, and school type would be a diligent effort towards map skills research. The present study, henceforth, will not only help stakeholders to understand the current status of students' map skills, but it will also provide empirical information that will help them understand the implications of students' demographics in their map skills acquisition at school levels.

Objectives of the Study

Following are the objectives of the study:

1. To study the levels of map skills among school students.
2. To examine the difference in map skills of male and female students.
3. To find out the difference in map skills of students in respect to their locality, i.e., rural and urban.
4. To identify the difference in map skills of students with respect to the type of school, i.e., government and private schools.

Key Terms Used in the Study

In this study, the author has focused on assessing the students' abilities in four different components of cartographic mappings, including map scale, direction, grid systems and spatial location, and map language, which includes convectional signs, symbols, and colors. A brief description of these components of map skills has been provided, such as –

Map Skills

Individuals' ability to read and interpret maps correctly with a proper understanding of scale, direction, grid systems, and map language; convectional signs, symbols, and colors, is referred to as map skills.

Map Scale

It is the proportion of the real distance on the ground to the corresponding distance on a map (Sarkar, 2009). In the absence of scale, a cartographical map resembles a sketch or rough drawing (Khullar, 2011). It provides readers a succinct description of the proportional area represented on a map in respect to the real area on the ground, as well as information about the linear relations amongst those objects depicted on the map.

Direction

On most maps, one arrow with the alphabet capital 'N' at the uppermost right corner represents cardinal direction North (North Line) and aids readers in reading maps correctly, which is why most cartographers consider it as one of the most important essential components of a good map. It is the point of orientation of a represented area or object on a given map. In the missing, especially in topographical maps, it is very difficult to understand the geographical as well as the socio-cultural landscapes of an area (Singh & Singh, 1991; Khullar, 2011). To comprehend a given map, there are usually four primary directions, such as, North, South, East, and West, and four minor directions, such as North-East, South-East, North-West, and South-West (NCERT, 2006).

Grid Systems and Spatial Location

This is the regular pattern of intersection space between horizontal and vertical lines that represent latitudes and longitudes, respectively. The term 'grid' simply refers to a system of the intersection of latitudes and longitudes (NCERT, 2006). Understanding

the latitude and longitude grid system is crucial for establishing the precise location and orientation of any object on the face of the earth depicted on a map. This is also important for determining a country's or region's standard time.

Map Language

There are different signs, symbols, and colors with their own function, which are used to depict different geographical features and socio-cultural and political landscapes of an area on a map. These signs, symbols, and colors are universally recognised and have the same meaning for everyone regardless of their regions or countries. For example, red denotes human settlements, blue denotes a water body, green denotes vegetation or forest, yellow denotes farmland, and so on (NCERT, 2006).

Hypotheses of the Study

- 1. HO1:** There is no statistically significant mean difference in the map skills of male and female students.
- 2. Ho2:** There is no statistically significant mean difference in the map skills between rural and urban school students.
- 3. HO3:** There is no statistically significant mean difference in the map skills of government and private school students.

Methodology

In this study, a descriptive research design was adopted, with two different types of variables, such as an independent variable and dependent variable. Gender, locality, and school type were addressed as independent variables, while map skill was treated as a dependent variable.

Sampling

The author has adopted a stratified random sampling strategy. The district of Malda has a total of 17 blocks, five of which were

randomly selected (keeping in mind the rural-urban dichotomy). Then, from each of the five selected blocks, two schools were chosen based on their co-education setup. Finally, a total of 300 ninth-grade students from each of the selected schools were selected for this study. The sample was dichotomized based on gender, locality, and school type, which included 158 male and 142 female students, 172 rural and 128 urban school students, and 150 students from both government and private schools.

Testing Tool

Data was collected using a self-developed testing tool, which has four components of cartographic mapping, such as map scale (7 items, e.g., what is scale, i. the ratio between the actual distance on the ground & the distance shown on the map, ii. the ratio between two places on a map, iii. the ratio between two places on the earth's surface), direction (8 items, e.g., which part of a map tells you direction (N, S, E, W) – i. Scale, ii. Title, iii. Map key, iv. Compass rose, & which among the following does not come under the cardinal direction – i. North, ii. South, iii. East, iv. North-west), spatial location (6 items, e.g., the imaginary that divided India into equal parts is called as i. Equator, ii. Tropic of Cancer, iii. Tropic of Capricorn, iv. Arctic Circle, & which state is located in the furthest north of India – i. Himachal Pradesh, ii. Punjab, iii. Jammu & Kashmir, iv. Rajasthan, & locate the following rivers, mountains and cities on the physical map of India; Ganga river, Mahanadi river, Aravalli mountain, Kolkata, and New Delhi) and map language (9 items, e.g., which colour is used for showing plains on a topographical map, i. Yellow, ii. Green, iii. Brown, iv. Blue). The test consists of 30 items of MCQs (Multiple Choice Questions) with three/four options each. No question holds any negative value for the wrong response. The range of the score was between 0 and 30. The scale's composite score was used to determine students' map skills.

Reliability and Validity of the Tool

For checking the validity of the self-prepared testing tool, the author has conducted a pilot study on 25 students, and three items were modified depending on students' responses and feedbacks. Then, the author has done content validity through experts' feedbacks. Finally, Cronbach's Alpha reliability was used to check the tool's reliability with 30 items. The test revealed a Cronbach's Alpha score of .762 ($>.7.0$), indicating that the developed tool has good internal consistency (Cronbach, 1951).

Statistical Tools

The collected data were analysed using both descriptive and differential statistics. Descriptive statistics, such as frequency, mean, standard deviation, and differential statistics, such as an independent sample t-test were operated to test the formulated hypotheses using the IBM SPSS v22 software.

Results of the Study

Status Quo of Students' Map Skills

To assess students' map skills, frequency and percentage were computed. It was observed in Table 1 that 35 per cent of the students scored in between 26 and 30 marks (88.66%-100%), while 32.4 per cent students who scored less than 70 per cent marks, out of which, 22.7 per cent students scored between 16 and 20 marks (53.33%-66.66%), 7.0 per cent students scored between 11 and 15 marks (36.66%-50.00%) and no one scored between 1 and 5 marks (3.33%-16.66%). Furthermore, it was found that 9.7 per cent of the students scored less than 50 per cent marks, indicating learning disparities in the attainment of map skills. Hence, it can be said that most of the students were good at map reading, while a few per cent of the students had performed poorly.

Table 1: Students' Scoring in Map Skills

Scores in Map Skills	Frequency (No. of Students)	Percentage (%)
26-30	105	35.0
21-25	98	32.6
16-20	68	22.7
11-15	21	7.0
6- 10	8	2.7
1-5	0.0	0.0
Total	300	100

Levels of Students' Map Skills

Table 2 showed that students had a mean score of 22.65 in map skills, with a standard deviation of 5.3. The scale had a Mdn value

of 15. Students' mean map skills score was found to be greater than the scale Mdn value (22.66 $>$ 15). Henceforth, it may be concluded that students' level of map skills was high.

Table 2 : Students' Level of Performance in Map Skills

N	Mean	S.D.	Mdn-Value
300	22.65	5.3	15

Map Skills among Male and Female Students

The analysis of Table 3 revealed the outcome of 158 male and 141 female students' scores in map skills, out of the total number of 300 participants. It was observed that male students' mean score (Mean=25.07; SD=3.95) was higher than that of female students' mean score (Mean=19.78; SD=5.17). The calculated t-value of 9.99 was statistically significant at a sig value of 0.012 (two-tailed, $p < .05$). The computed Cohen's d was 1.16 ($t \times 2 / \sqrt{df}$), indicating that the difference in map skills between male and female students

had a substantial effect size. Henceforth, the constructed null hypothesis "HO1: there is no statistically significant mean difference in map skills of male and female students" was rejected at 0.012 level ($p < .05$), while the alternative hypothesis "there is a statistically significant mean difference in map skills of male and female students" was accepted. By implication, it is signified that the male students had a higher level of map skills compared to their counterpart female students.

Table 3 : Mean and t-test of Map Skills of Male and Female Students

Gender	N	Mean	S.D.	SEM	SED	t- value	df	Sig. level
Male	158	25.07	3.95	.314	.529	9.99	297	0.012
Female	141	19.78	5.17	.436				

Map Skills among Students of Rural and Urban Schools

Table 4 indicated the results of 123 rural and 177 urban school students' scores in map skills out of 300 samples. The mean score for rural school students was found to be lower (Mean=20.88; SD=5.86) than the mean score for urban school students (Mean=23.76; SD=4.46). It was observed the computed t-value of 4.831 was statistically significant at a p-value of 0.03 level ($p < .05$). The computed Cohen's d was .56 ($t \times 2 / \sqrt{df}$),

indicating that the difference in map skills between the groups had a substantial effect size. As a result, the null hypothesis "Ho2: there is no statistically significant mean difference in map skills between rural and urban school students" was rejected at 0.03 level, while the research hypothesis "there is a statistically significant mean difference in map skills between rural and urban school students" was accepted. By implication, it is inferred that the students of urban schools had a higher level of map skills compared to their counterpart rural school students.

Table 4 : Mean and t-test of Map Skills of Rural and Urban School Students

Locality	N	Mean	S.D.	SEM	SED	t- value	df	Sig. level
Rural	123	20.88	5.86	.528	.596	4.831	298	0.03
Urban	177	23.76	4.46	.335				

Map Skills of Students of Private and Government Schools

Table 5 showed the results of 150 private and 150 government school students' map skills tests. The mean score for private school students (Mean=26.19; SD=3.14) was higher than the mean score for government school students (Mean=18.97; SD=4.41). The calculated t-value of 16.321 was significant at 0.01 level (two-tailed, $p < .05$). The computed Cohen's d was 1.89 ($t \times 2 / \sqrt{df}$), indicating that the difference in map skills between private

and government school students had a large effect size. Hence, the stated null hypothesis "HO3: there is no statistically significant mean difference in map skills of government and private school students" was rejected, while the alternative hypothesis "there is a statistically significant mean difference in map skills of government and private school students" was accepted. By implication, it is signified that the students of private schools had a higher level of map skills compared to their counterpart students of government schools.

Table 5 : Mean and t-test of Map Skills among Students of Government and Private Schools

School Type	N	Mean	S.D.	SEM	SED	t-value	df	Sig. level
Government school	150	18.97	4.41	.361	.442	16.32	298	0.01
Private school	150	26.19	3.14	.256				

Discussions

The current study found that school students had a high level of map skills, nevertheless, a discrepancy was recorded in scoring patterns (Table 1). Furthermore, the study identified a significant mean difference in students' map skills based on their gender, locality, and school type, wherein, male students and students of urban schools and those from private schools had higher levels of map skills compared to their counterparts female students, rural school students, and the students of government schools, respectively (Table 3, 4, 5). The findings of this study were supported by a study undertaken by Henrie, et al. (1997), which found a gender gap in the acquisition of map skills among students, with male students outperforming their female counterparts. Gilmartin and Patton (1984) found that gender played a significant role in map-use activities, such as symbol identification, route map planning, visual search, and orientation among young students, with boys outperforming their female counterparts. Herman, et al. (1988) also reported a substantial difference in the

location map skill component between male and female students. Male students' ability to locate places on maps was more accurate than female students, according to Beatty and Tröster (1987). Moon, et al. (2016) found that males outperformed females in cognitive spatial orientation map skills, although there was no statistically significant difference between them.

Notwithstanding, no supportive research on the disparities in map reading abilities between rural and urban students, or between government and private school students, has been discovered. However, the field observation suggested that a lack of teacher engagement for 'slow learners' may have contributed to the disparity in map skills acquisition across school-going students. In terms of the gender gap, it can be claimed that traditional society places less value on girls' education, causing them to get involved in household chores and caring for siblings at home. In this regard, Rahaman and Rahaman (2018) reported similar finding from a study conducted in the same district,

Malda, indicating that girls' performance is harmed by household pressure and uncertain future. The current study concluded that the availability of modern exposures might have caused a difference in map skills among rural and urban students. This finding from the field observation was supported by Anwaruzzaman and Kasemi (2019) who conducted a study in the same district, revealed that the underdeveloped socio-economic conditions in rural areas are the causes of the rural-urban discrepancy in learning. Further, the current study identified from the field observation, that the disparity in map skills between government and private school students was caused by a lack of required staff, infrastructures, pupil-teacher ratio, exposures, and management efficiency, and these findings are consistent with earlier studies, Goyal and Pandey (2009) and Rasool and Bhat (2018) conducted in different parts of India.

Delimitations and Suggestions

This study was delimited to investigate map skills acquired by secondary school students in the Malda district of West Bengal. It was a descriptive study that looked at how students' map skills differ depending on their gender, location, and school type. However, based on the findings, it was suggested that a study be conducted to explore the factors that contribute to better performance as well as the causes for learning disparities in map skills among school students in terms of their demographics, specifically, gender; male and female, locale; rural and urban, and school type; government and private school.

Conclusions

Overall, it is fair to conclude that the teaching of map skills is an important aspect of school education in West Bengal. The factors related to individual, family, and schools potentially affect students' ability to acquire map skills. In light of this, the current study

has provided empirical evidence on students' status quo on map skills and learning gaps in terms of gender, locality, and school type. The findings of the current study, henceforth, are worthwhile to stakeholders in comprehending the status of student's map abilities, and in comprehending the implications of students' demographics in the acquisition of map skills at the school level.

In the present study, though the overall level of map skills amongst students was found to be high, but around 10 per cent of students were identified to be less capable of map reading skills. Henceforth, the study suggests, teachers bestow equal importance to all students and direct their special attention to those who were less capable or slow learners. Female students had performed less on map reading skills than male students, which is due to a traditional society that places less importance on girls' education, and the lack of socio-emotional support for girls' education. So, parents and teachers must play a critical role in dispelling the traditional mindset and providing moral supports to young girl students, both at home and school.

Furthermore, the study found that rural school students were less proficient in map skills than urban school students, owing to a lack of modern exposures and educative parental supports for their education. In this case, school authorities should facilitate parent guidance programmes, as well as take steps to ensure required modern equipment in the schools. Students from government schools had performed less on the map skills test compared to private school students. It was found that learning disparities in map skills between the groups were caused by the lack of infrastructure and good management at government schools. Henceforth, government school authorities and teachers should focus their attention on these issues and take the required initiatives to improve map skills among students.

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