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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Guidelines for Authors

'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.

Contents

Editorial

The issue of Voices of Teachers and Teacher Educators, Volume number XII, carries 14 papers. The papers examine a variety of issues and study different genres as well. The areas studied in these papers include early childhood education, secondary education and teacher education. While there are only two papers that focus on studying school classrooms. One of them assesses and reflects on the space for and manner of dialogue in the classrooms and the other is focussed on studying the effect of use of ICT in biology classrooms for which it uses a specific topic as an example. Three papers develop tools to study the attitude and dispositions of the teachers. Three other papers deal with some newly developing areas of content for teacher education. There is a book review and three papers that respectively study some aspects of inclusion and reach of education. The first paper studies the care needed by special ability children and the challenges of providing institutional care for them and the second paper is an analysis of the educationally backward block. The third paper is a study of the aspirations of the mothers from the marginalized communities about the early education of their children in the beginning years of their education. The remaining two papers included in this issue are studies of secondary school children. These are studies in areas which are in the domain of psychology. The first of these is a study of the effect of cooperative learning on the development of emotional intelligence, creativity and the problem solving ability. The second paper in this stream is a study of the relationship between the levels of emotional intelligence and socio-metric status. The categories that we have created do not fit the papers too well as we can see the brief descriptions of all the papers except the book review.

The paper by Seema Naaz, Anubha Rajesh and Aghna Shujat, "Alternative Care for Children: Institutional Care vs Family-based Care", brings out the gaps and issues special children face while living in institutions. Globally the population of vulnerable children has increased manifold over the years due to various reasons. In such a scenario the children are considered as the state's responsibility. In India, few researches are available about social-emotional, academic delays and needs of children in institutions.

The study by TBC Lalramnghaka, & Prateek Chaurasia, "A Critical Analysis of Educationally Backward Block (EBB) Schools of Mizoram: A Case Study" investigated schools of Educationally Backward Block (EBB) in Lunglei District, Southern part of Mizoram. Four secondary schools were randomly selected and a self-developed case study proforma and a checklist was used to collect data. The paper presents the analysis of these observations.

The paper of Ritika Srivastava titled "Aspirations and challenges of mothers of marginalized early years children: Reflections from Bhopal City, India" explores mothers' aspirations and challenges in caring for and educating marginalized early years children in Bhopal. Global policies and research accept the significance of early years learning and care for children. The paper brings out the structural inequality embedded in accessing quality primary care and early literacy opportunities.

This paper by Garima Aggarwal entitled "Understanding Pedagogical Dialogue: Indian context" presents a part of a qualitative study conducted in three Indian classrooms (Delhi)- state-run school, private school and private-progressive school to understand the extent of meaningful engagement that the teachers can provide in the classrooms. The analysis helps in considering how the nature of 'multiple discourses' work together in classroom communication and the

discursive space that it provides to students.

The paper by Jitendranath Gorai, Gavisiddappa R. Angadi, "Developing a Standardized Scale to Measure Teachers' Perception and Attitude Towards Apprenticeship Embedded Degree Programme" studies Apprenticeship Embedded Degree Programme (AEDP), as envisioned in NEP-2020. Using a five-point Likert scale in this study (Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree), it has analysed responses from 310 teachers from different high schools, colleges, and universities (assistant/associate/professors) working in India's West Bengal's "Rarh Region''.

Adithi Muralidhar, Huda Sayyed, and Mala Pandurang in their paper "Infusing Environmental Studies in the Undergraduate Curriculum of a Home Science Program: A Pedagogical Intervention", share the analysis from their experience. They argue that the Environmental Studies (ES) curriculum at the undergraduate level is largely theoretical and pedantic. Moreover the theme may also lack relevance for students who are pursuing degrees that may not seemingly or directly be related to the environment. In order to address these issues, an intervention was designed collaboratively between the institutional stakeholders; and implemented in a college of home science.

Sneh Bansal in her paper "An Exploration of Higher Education Teacher Education programmes: During and post-COVID-19 pandemic" considers teacher education programmes in India, suggests that these are heavily dependent on the conventional approaches to teaching learning with little effective integration of technology in teaching. The study attempts to understand this through a qualitative study using an open ended questionnaire seeking reflections of student teachers on on-line learning including the challenges encountered.

Madhuri Hooda in her article, "MOOCs a Renaissance in Indian School Education: Review in Context of SARS-CoV-2 and NEP2020" critically examines the impact of covid 19 over Indian school education, along with the aspiration of NEP to radically transform the whole Indian education system. She discusses digital initiatives like ATLs, NEAT, DIKSHA, ePG Pathshala, etc.. Article has also thrown light on NEP's vision of leveraging ICT in teaching and learning; and developing MOOCs as a new techno pedagogical innovation. The article also attempts to explore the real potential of MOOCs in addressing the issues of school education along with some inherent challenges.

The paper by M. Balamurugan, "Video-Based Learning the concept of Plant Tissue Culture during Covid19 among Higher Secondary Students – An Empirical Study" studies the use of video based learning on students. Over the past few years, videos are being widely used in classrooms to improve academic achievement. Taking the concept of 'Plant Tissue Culture' single-group test-retest experiment design was adopted for the study of class 12th students of a school in Thanjavur, Tamil Nadu. They find video played in the classroom performed better than the video as a home assignment.

The paper "Cooperative Learning Approach for enhancing Emotional Intelligence, Problem Solving Ability and Scientific Creativity among Secondary School Students" by Jeena K G examines the effectiveness of the cooperative learning approach on secondary school students. In particular on their emotional intelligence, problem solving ability and scientific creativity. Using a post test non equivalent experimental control group design on 60 students. The major findings revealed that the students, who learned through cooperative learning approaches, enhanced their emotional intelligence, problem solving ability and scientific creativity.

The paper of Proloyendu Bhoumick, "Sociometric Status at Classroom's Context: Role of Emotional Intelligence" presents a sociometric study on the association between the levels of Emotional Intelligence (High, Average, and Low) of the students and their Sociometric statuses

(Preferred, Rejected, Neglected, Controversial and Average) in the classroom's context. A total of 178 students of class IX from 4 conveniently selected classrooms participated in this study. Emotional Intelligence refers to the ability to identify, understand, manage, and effectively use one's own emotions and emotions of others.

The paper "A study on the influence of teaching experience on social intelligence and professional commitment of secondary school teachers of West Bengal", by Antara Dey and Nil Ratan Roy is focused on examining whether and how the levels of teachers' social intelligence and professional commitment is influenced by their experiences and their teaching. The multistage sampling procedures were used 387 (186 female and 201 male) secondary school teachers selected from five districts (viz. Hooghly, Birbhum, North Dinajpur, Murshidabad, and Nadia) of West Bengal. The study used a cross-sectional survey research method with a one Way analysis of variance. Results show that teaching experience significantly influenced teachers' social intelligence and their commitment to the teaching profession.

The paper by Hemendra S. Mistry has the title "Developing an Inclusive education teaching aptitude test: Pilot testing and item selection" reports the pilot testing process of draft inclusive education teaching aptitude test (IETAT), principally focusing on the trial version of actual test administration along with item analysis in terms to determine difficulty values and internal consistency indexes of test items. Data were collected from 38 pre-service teachers of a teacher education institution. Results indicated that the pilot testing helped in removing the weak items with ambiguity and deficiency, standardization of test instruction and time limit, and developing the final version of IETAT.

The last inclusion in this issue is a book review of the book "THE VERY HUNGRY CATERPILLAR. The review" is done by Priyanka Koch and Hitesh Sharma

This issue of Voices of Teachers and Teacher Educators has a variety in the background of the paper writers and we find that heartening. While there are no papers in hindi in this issue we are a bilingual publication and would like to carry papers in hindi as well. We would like to encourage all our readers to send their work for publication to us. We must tell you that while we have a rigorous blind review process, our reviewers often give detailed comments and suggestions to the authors to improve their papers and send them for re-review. We would like more practitioners to write about reflections on their work in an analytic manner and placing it in the current context of educational discourse. We look forward to your contributions but would urge you to be patient once you send in your papers as the review process can sometimes be long. We also look forward to your comments on the papers and any suggestions you may like to give for the publication itself.

Alternative Care for Children: Institutional Care vs Family-based Care

*Seema Naaz**
*Anubha Rajesh***
*Aghna Shujat****

Abstract

Globally population of vulnerable children have increased manifold over the years due to various reasons. In such a scenario the children are considered as the state's responsibility. Researchers have documented that family is the best place to provide adequate care and for optimum development of a child, however, circumstances compel them to go into alternative care. Henceforth several provisions including institution and non-institution based alternative care have been made available for vulnerable children in India and across the globe. Non-institutional i.e. family-based care option for such children have been considered best, hence deinstitutionalisation is a recent debate. However, deinstitutionalisation without proper planning might stumble the state and system. Institutions, as care options, are considered as the last resort, however their role cannot be negated keeping in view the huge population of vulnerable children in India. It's thus imperative that rather than haphazardly closing institutions, efforts to empower the institutions must be made to respond to the holistic development of children, according to their ages. Researches corroborated that children in these settings encounter multitude of delays and problems in various domains and academic performance. In India, few researches are available about social-emotional, academic delays and needs of institutionalised children. Therefore, this paper presents gaps and issues children face while living in institutions and also suggest that family-based alternative care options are yet to be evolved and accepted fully by Indian society.

Keywords: *Vulnerable children, Deinstitutionalisation, Alternative Care, Academic needs, Social-emotional needs*

Vulnerable children: Indian Scenario

Children who experience abuse, exploitation and neglect are categorised as vulnerable children (United Nations Children's Fund [UNICEF], 2010). In India, vulnerable children come under the purview of Integrated Child Protection Scheme (ICPS) which provides protection to them. These children are those who go through "difficult circumstances" (Ministry of Women and Child Development [MWCD], n.d., p.7). According to revised ICPS, vulnerable children involve but are not confined to only these groups of children,

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> *"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, children infected/affected by HIV/AIDS, orphans, drug abusers, beggars, trafficked or sexually exploited, children of substance abusers & prisoners, street and working children." (MWCD, n.d., p.11)*

The vulnerable children have been categorised under two groups by the JJ Act and ICPS namely children in need of care and protection (CNCP) and children in conflict with law (CCL) (MWCD, n.d.).

Child Protection, Role of Family and the State

Child protection is a total of all the efforts to be made to safeguard children from circumstances that place their healthy development and well-being at risk. According to UNICEF, child protection means "preventing and responding to violence, exploitation and abuse against children" (UNICEF, 2006, p.1). The dimensions of child protection include measures and structures that avert and retort to physical, sexual, emotional or psychological abuse, child trafficking; child labour; abuse in home, school, and community; commercial sexual exploitation; and detrimental practices, such as child marriage and female genital mutilation, etc. Also, child protection includes reaching children who are particularly vulnerable without family care, living on the streets or in situations of disasters, whether natural or manmade.

Article 18 of the United Nations Convention on the Rights of the Child (UNCRC) emphasises the important role of both parents in ensuring the well-being of their child. It further states that the government is responsible for supporting parents or legal guardians of children to take optimum care of children (Office of the High Commissioner for Human Rights [OHCHR], n.d., para. 1). Article 20 states that if residing with parents is not in the best interest of the child and the child's optimal development is not supported then state has the responsibility to provide special protection to such a child and ensure that the child receives adequate care and protection that further respects the child's language and religion (OHCHR, n.d., para 1).

Alternative Care: Children in Need of Care & Protection

The UNCRC (1989) has emphasised upon promoting and protecting the rights of children through development of policy and programme. Alternative care has specifically been dealt with in Articles 9, 18, 19, 20 and 21 of UNCRC. Henceforth, the UN Guidelines on Alternative Care came into existence in 2013 to enhance the UNCRC's implementation.

The UN Guidelines for the Alternative Care of Children also outline two basic principles for alternative care. The first principle being necessity, prevents the unwarranted placements of children outside their homes. This principle asserts the foremost priority is that children are looked after in their homes that are close to their culture, language and religion and an alternate placement is explored only if care is genuinely needed. The second principle of suitability, states appropriate care should be provided to the children when required which meets their individual and unique needs. Consequently, primacy should be given in preventing the separation of children from their families (Article 9 of the UNCRC), unless the situation is grave and children continue to experience adversities. One of the key tools in providing for alternative care for children is the concept of continuum of care, starting from the most desirable practice, i.e. family strengthening to the least desirable practice, i.e. institutionalisation.

Continuum of care recognises family as the fundamental unit providing a supportive, caring and protective environment for

children and places institutionalisation at the last. Furthermore, significance of family for a child has been recognised by the producers of international human rights law and policy. Besides, a high priority has been accorded to continuum of care (Naaz & Meenai, 2019).

Need of Child Care Institutions versus Deinstitutionalisation

Family is considered to be the finest place for growth and development of a child. However, in case of separation of child from the family, which might be due to various reasons, the prevalent approach is to send such children to Child Care Institutions (CCIs) as provisioned in the Juvenile Justice (Care & Protection of Children) Act 2015 to provide care and protection to CNCP. This is however changing rapidly. It is being increasingly felt and there is enough scientific evidence too, that institutionalisation of children does more damage to them than any good. Children who grow up in institutions are known to suffer from cognitive, emotional and social impairments. They perform poorly in school, display behavioral problems and often suffer from anxiety and depression (Akhtar, 2018). There is also growing consensus that institutionalisation is not compatible with a human rights-based approach. According to UNCRC, provision of healthy familial environment which is full of care and love is utmost important for all encompassing development of children (OHCHR, n.d.).

There is no optimal place that nurtures and provides caring environment to a child to be raised in but a family. A family gives values, sense of belonging, self-esteem and cultural identity. Children who are brought up in families are more prepared to face the challenges of society and be social as compared to those raised in CCIs. Thus, CCIs are found to have a controlled and structured environment. Nonetheless they need to be supported for the optimal development of children.

The UNCRC directs that all efforts should be made to strengthen families to be able to continue to care for their children and where the family is incapacitated to do so, attempt should be made to place the child in family-based alternative care which includes guardianship, kinship care, adoption and foster care. It has also been emphasized that in addition to institutional care arrangements for the children, family-based alternative care options should be made available and institutionalisation should only be considered as a last resort that too for short term. While considering option of institutional care, placing children in small family-like environment like group foster homes is advised.

Each child is unique and it is essential to individually review the case of each child who requires alternative care. Henceforth, the action plan must be developed keeping the best interest of the child in view. UNCRC's Article 3 specifically emphasises upon the 'best interest of the child' while taking decision concerning them (OHCHR, n.d.).

Ironically, while on one hand we criticize institutions, there is an essential role that these institutions play. Over the years, the number of children in India who need a home and care are increasing steadily. On the other hand, the traditional support systems that have been in existence for decades where extended families play significant role in providing family-based alternative care (also known as kinship care) to the children are gradually disintegrating. Furthermore, kinship care was conventionally offered informally without intrusion of the Government (Naaz & Meenai, 2019). Hence there arises a need to have provision of formal CCIs for the CNCP to serve the underprivileged children in absence of family-based alternative care. Therefore, it raises questions on the process of deinstitutionalisation and shutting down of CCIs abruptly without addressing the need of having an alternative to these institutions which may provide family like care and environment to the

CNCP. Though these institutions are not the best places for children's development and growth as they focus on only providing them shelter and necessities. The process of deinstitutionalisation and promoting family-based alternative care must go hand in hand to provide best alternative to the children with a vision to have a robust system of family-based alternative care in place in India.

Developmental Delays: Children in Institutional Care

Globally research has confirmed that children in institutions experience a range of developmental delays. Evidence from countries, like, Ethiopia, India and Pakistan have shown prevalence of delays in physical growth, in form of stunting and malnutrition due to inadequate consumption of nutritious diet (Gultie, Sisay,& Sebsibie, 2014; Vaida, 2013). In relation to motor skills, children were found to have deficits in locomotion, eye-hand coordination, and bilateral coordination skills when assessed through standardized measures (Giagazoglou, Sidiropoulou, & Koulioussi, 2013; Roeber, Tober, Bolt, & Pollak, 2012).

Further, of major concern are the behavioral and mental health related problems of institutionalised children (Hawk & Mccall, 2010). Factors, viz, inconsistent and inadequate responsive and sensitive care practices coupled with frequent changes in caregivers, particularly, during the first two years of life are attributed for several behavioral issues in institutionalised children and these challenges continue to persist even after adoption (Hawk & Mccall, 2010). Cprek, Williamson, Mcdaniel, Brase, and Williams (2020) have established that adverse childhood experiences are known to render children vulnerable to developmental delays. Moreover, the impacts of problems faced during foundational stage of life were not only felt during early childhood, middle childhood and adolescence but also during adulthood. Sherr, Roberts, and Croome (2017) through a retrospective study conducted with adults who were abandoned during infancy, revealed that they experienced difficulties in establishing and maintaining relationships, had trust issues and were in perpetual grief. Therefore, responsive care and positive interactions rendered to children in early years are of critical significance. Adequate provisions in terms of four aspects, namely, food security, quality of shelter, care giving and access to health services were found to be critical for psychosocial development of institutionalised children, particularly, in Low and Middle Income Countries (Huynh et al., 2019). Therefore, favorable environment irrespective of the settings is crucial for children.

The above discussion pertained to how institutional care, especially if experienced during formative years of life, cause developmental delays in children and has far-reaching impact even in adulthood. Likewise, research on academic needs of institutionalised children informs similar deficits.

Academics and Related Delays: Children in Institutional Care

Non-fulfillment of developmental needs impacts the academic and scholastic performance of children. In India, research on specific academic delays, such as comprehension and reading skills, among institutionalised children is limited. Merely, few research studies shed light on academic problems of such children; however, they only provide limited information. Kaur, Vinnakota, Panigrahi, and Manasa (2018), for instance, sampled 292 orphaned children and adolescents who were in the range of 4-17 years from Visakhapatnam in Andhra Pradesh and documented that more than two fifth children performed averagely, while more than one tenth had poor academic performance and the critical reason for the same was lack of expectations from the caregivers. Further, one important finding of this research was an association between

poor performance and lack of pro-social behaviour.

Internationally, researchers examined various academic related skills (Desmarais, Roeber, Smith, & Pollak, 2012; Hough & Kaczmarek, 2011). To elaborate, in US, Desmarais et al (2012) tested 23 post institutionalised children and 36 non-institutionalised children (who had always lived with their own families) on sentence comprehension skills and spatial working memory skills using standardised tests. On average, children in both groups were eight years of age. Before adoption, children were in institutional care in Countries, namely, China, Russia, Bulgaria, Romania and India. The results revealed that even though post institutionalised children had been residing in US for an aggregate of six years and were in supportive environment, then also, they performed poorly on these tests. The scholars submitted that these children faced problems in school-related language while their day-to-day language used in informal conversation was not affected. The scholars further put forth that special education intervention is required to incorporate activities and sessions on these two skills to address learning problems. Likewise, another research reported that institutionalised children adopted from East Europe, were able to express themselves, for instance, make a request and gain attention. While they did possess basic language skills, they made grammatical errors while speaking, and could not perform activities such as letter recognition, word matching and retell a story after recalling it. Moreover, children who were institutionalised for longer duration had poor reading performance (Hough & Kaczmarek, 2011). Keeping this in view, the authors suggested that activities which hone literacy skills of such children should commence early and adoptive parents need to engage children in varied stimulating activities, viz, read to children, enhance print awareness, and symbol recognition (Hough & Kaczmarek, 2011).

To conclude, various factors such as inconsistent care and inadequate personal attention to children in institutional care, limit children's skills to respond to cognitively engaging demands at school (Roy & Rutter, 2006). Consequently, understanding several developmental needs, viz, cognitive, language, academic and social-emotional needs and being responsive to them from early years is of utmost importance.

Conclusion & Recommendations

Statistics are indicative of increasing population of vulnerable children globally and in India, and so the number of children living in alternative care is on the upsurge. Although various instruments including UNCRC emphasise on the family's role in the care of a child, yet role of state cannot be negated. Hence, when families are unwilling or incapacitated to care for their children, these children become the state's responsibility. While it is acknowledged globally that family is the most appropriate unit for the holistic development of children, yet the vulnerable children are compelled to go in alternative care which includes institutional as well as non-institutional care options. The recent debate and agenda of deinstitutionalisation that lacks proper forethought put lumber on the state and system. On one hand there is an agenda of deinstitutionalisation i.e. closing of CCIs haphazardly with no preparation and place to go for these children living in the CCIs, and on the other is the vital role played by these CCIs in extending immediate shelter and care to the children in absence of satisfactory family-based measures cannot be shunned. Keeping the large child population and poor child protection systems in place in India, role of CCIs have been of an avenue that is never unapproachable for the CNCP. Indeed, there are shortcomings of keeping the children in institutions and institutionalisation should be considered as the last resort. Negative consequences of institutionalisation on children are known, however it too is evident that family-based alternative care options

are yet to be evolved and accepted fully by Indian society. In the current scenario where families are incapacitated to extend help to these vulnerable children, institutions shall continue playing their role. However their functioning may be enhanced through research and intervention. Though there is a dearth of research conducted on social-emotional, literacy and numeracy needs of children in CCIs in India, yet the international research and little that could be found in Indian context is suggestive of compromised holistic development of these children. Major areas of concern found among children living in CCIs were 'social-emotional skills, cognition and academic performance'. Researchers have vouched for rendering early intervention to children to ensure their optimal development. Importantly, apart from children, intervention to caregivers at institutional care is warranted in order to equip them to render quality care to children.

To address the issues discussed in this paper that are creating hindrance and negatively impacting the success of the care reform, a few recommendations are made. Below discussed strategies are recommended after delving into the current scenario of deinstitutionalisation in India and adopting them may assist in making the agenda of deinstitutionalisation a reality in India:

- Repair and strengthen the existing systems of care i.e. CCIs - It is understood that family-based alternative care options have their own set of limitations and might take longer to be accepted and embraced in Indian scenario. While attempting to shift the focus from institutions to family-based alternative care, primary efforts should be made to strengthen the existing system of CCIs to provide quality care to the children.
- Building resilent communities and families — When the endmost objective is reunification and reintegration of the children in need with their families and within the familiar communities, the foremost attempts should be made to build resilient communities who will raise children who are resilient. Providing support through income generation programmes, psycho-social support for families and children, building support networks in communities, parenting programmes for positive outcomes, and sponsorship for children are a few strategies that may be adopted.
- Additionally, a situational analysis and need assessment of the families is to be done to understand the need of families so they may be capacitated to welcome their children back and reunified; proper planning and resources to support the system and families is needed.
- Adopt a preventive approach — Focus should be shifted to prevention programmes i.e. Family Preservation and Strengthening programmes. Preventive approach should be adopted so to limit the system's dependency on alternative care options for the vulnerable children. The families at risk should be identified and supported to prevent break-up of the families and efforts should be made to strengthen their capacities of caring for their children.
- Families are the basic unit of the society and strengthening the institution of family to overcome the issues like poverty, unemployment, neglect, abuse, violence, etc., is the key to keep children within their families.
- Strengthening of families may be done through income generation and livelihood programmes, hence one of the ways could be supporting the vulnerable communities in becoming financially capable and independent to be able to care for their children and those in kin.
- Investing and promoting research — Since there is a dearth of researches conducted with children's lived experiences, it is recommended that more researches should be taken up and funded at the state and national levels to study the needs of children in institutions and interventions must be planned accordingly.

- Gatekeeping — Gatekeeping as a concept must be given importance and should be used as a tool since it has a huge potential to warant that a child is separated from their family only when necessary and unavoidable and in the best interest of the child. Also, it has to be ensured that appropriate family and community-based options of care to meet the holistic needs of the children are made available.
- Planning and management of the resources - Deinstitutionalisation is the ideological shift that require consideration of certain challenges for effective implementation and successful/ positive outcomes. The transition from institutional care to family-based alternative care options require robust planning, intensive strategies, dedicated skills and adequate resources. The existing child protection cadre across the country needs a makeover in terms of capacities, which will help in functioning and facilitation on the ground level smoothly.
- Sustainability of the solutions should be of foremost importance — Last but not the least, sustainability of the care options should be considered. Many alternative care options require recurring expenditure/financial support like foster care, hence sustainable solutions that are in the best interest of the children should be promoted. Additionally effective and indigenous practices that are sustainable in local cultural context need to be promoted.

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A Critical Analysis of Educationally Backward Block (EBB) Schools of Mizoram: A Case Study

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Abstract

The present study investigated schools of Educationally Backward Block (EBB) in Mizoram. These schools were situated in Lunglei District under the Tlabung Sub-division in the Southern part of Mizoram close to the Bangladesh border. Secondary School was the main target of the study and four schools were randomly selected. A self-developed case study Proforma and a Checklist for School observation were used to collect data. The study was purely qualitative in nature, and analyses of the schools were done in the light of selected parameters. The teaching-learning process in Educationally Backward Block (EBB) Schools in Mizoram was basically child-centric. Teachers and students were working hard to catch up with others students in different parts of the state. Instead of having some fundamental obstacles in terms of communication between students and teachers, lack of ICT assistance and unavailability of SMDC.

Keywords: *Critical analysis, Educationally Backward Blocks (EBBs), Case study.*

Introduction

Mizoram ranks third in the country in terms of literacy, with a rate of 91.3 per cent (Business Standard, 2019). Nonetheless, Mizoram has one Educationally Backward Block, which is not ideal for the state, which is the most literate in the country. The only Educationally Backward Block (EBB) in Mizoram is situated in Lunglei District under Tlabung Sub-division in Lungsen Rural Development Block in the southern part of the state, close to the Bangladesh border. Though there is little information and it appears that no research is being conducted in the field of Educationally Backward Block (EBB), a study and analysis of the schools in the Educationally Backward Block (EBB) is both necessary and important.

Tlabung Sub-division in Lungsen Rural Development Block is Mizoram's only Educationally Backward Block and Mizo people alone did not live in that area or block; other tribes such as Chakma and Bru are also there. One could say that it is a very mixed area where people use their own mother tongue for communication. For example, Chakma people do not know the Mizo language and Mizo people do not know Chakma language — communicating with one another seems really difficult, and can be thought that because of the language barrier, most students' parents drop out which increases low literacy rate that leads to only Educationally Backward Block (EBB) in Mizoram. Having Researched on Educationally Backward Block (EBB) is very important because it will be able to notify their weaknesses and difficulties and once those are identified, steps can be taken to eliminate their backwardness. Research might help and develop their living and that

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can be a good benefit for the local people and for the nation as well. People living in that area are having a very low income on average and they really need help from the Government. Even today, some villages are not like even in jeep roads also and they used boats for transportation one can imagine that if there are no roads for transportation and communication, how will they receive adequate education? Research should be done in such a way that the State Government will know their difficulties and can take some measures to improve and solve problems in that area so that one day the local people and Mizoram might earn emancipation from Educationally Backward Block (EBB). It is very clear that it cannot be done in a very short period of time like two to three years, but at least the State Government needs to know the exact situation, and at the very least, the Government needs to devise some procedure, and start working on that. If not, it will remain as it is always and will still be deformed of Mizoram.

India has a total of 6701 blocks of which 3453 are educationally backward blocks as per the Department of School Education and Literacy under the Ministry of Human Resource Development. While elementary education is taken care of by the RTE Act in all the blocks including Educationally Backward Blocks (EBBs), secondary and higher secondary education needs special focus. The educationally backward blocks constitute 51.5 per cent (Sanghi & Sinha, 2014) of the total blocks in the country and 74 per cent (MHRD, 2016) of such blocks are concentrated in the eight states viz. Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, and Uttar Pradesh.

Lungsen Rural Developed Block is one of the numerous Educationally Backward Blocks (EBBs) in India. Because of the importance placed on the Block, the State government opened a new Education Sub Division at Lungsen on November 3, 2008 (School Education: Mizoram, 2016) which is an important step toward educational improvement. Furthermore, when the mid-day meal program was made available to the Middle School Sections, Lungsen Block was the first to benefit from it. During the tenth Plan, a program called the Scheme for Upgrading Female Student Residential and Hostel Infrastructure was in place. Lungsen Village was chosen for the establishment of a Model School and Girl's Hostel under the Scheme.

A case study is a detailed investigation of a particular individual, organization, or event. A case study looks at almost every aspect of the subject's life and history in order to find patterns and causes for their actions. Case studies may be employed in a variety of fields, including psychology, medicine, education, ethnography, political science, and social work, to name a few (Bassey,1999). The idea is to be able to apply what has been learned from one example to a variety of others. Unfortunately, case studies are sometimes subjective, making extrapolating results to a larger population challenging.

Education is the only way for human beings to do more than forage or hunt. Education is the only way civilization survives more than one generation. People living in Educationally Backward Blocks really need a much better education than they have right now in order to improve their Backwardness and that can be done best effectively by the state Government.

Objectives of the Study

1. To study the challenges of schools in the Educationally Backward Block (EBB) of Mizoram with respect to the teachers and students.
2. To analyse the teaching-learning practices in the schools of Educationally Backward Block (EBB) of Mizoram.
3. To identify the infrastructural challenges of schools in the Educationally Backward Block (EBB) of Mizoram.

Delimitation of the Study

1. The study was conducted only in the Educationally Backward Block (EBB) schools of Mizoram.
2. The study was done only in the high schools of Educationally Backward Block (EBB) of Mizoram.
3. The study was done on the selected parameters of the Educationally Backward Block (EBB).

Design of the Study

The study is basically a qualitative study. Therefore, the study has made use of the qualitative analysis technique for achieving the objectives of the study. The study has used the case study technique to study the challenges and another related aspect of the schools in the Educationally Backward Block (EBB) of Mizoram. As well as a checklist to analyse the schools in EBB.

Population and Sample of the Study

Population

For the present study, the schools of Educationally Backward Block (EBB) of Mizoram were taken as a population.

Sample

For the present study the selected schools of Educationally Backward Block (EBB) of Mizoram have been taken as sample. Here, in this study, four different schools of Educationally Backward Block (EBB) were selected randomly as a sample. Out of which three schools were from Tuichawng and one from Tlabung Village.

Tools used in the Study

In the present study researcher has developed the following tools:

1. A Case Study Proforma.
2. A Checklist for school observations.

Development of Case Study Proforma

Proforma for a case study of Educationally Backward Block (EBB) schools in Mizoram was developed by the researcher. The proforma was developed on the basis of certain criteria like: About the schools, learners' enrolment and characteristics, the profile of the teacher, the teaching-learning process, community ownership, and best practices of the schools. With the help of this case study proforma study of all four schools was done.

Development of a checklist for school observations

A checklist for the observation of Educationally Backward Block (EBB) schools was developed by the researcher. The checklist was developed on the basis of selected dimensions for school observation. The checklist contains a total of 31 items related to the infrastructure of the schools, the teaching-learning process, the school environment, learner assessment/ evaluation, and innovative practices in the school.

After the final development of the checklist, the first draft of the checklist was given to the experts for suggestions and validation. After incorporating the suggestions given by the experts into the checklist, the final draft of the checklist was developed.

Data Collection

In the present study, data was gathered with the help of the case study proforma as well as with the help of a checklist. A case study is used for overall critical inspection related to selected schools, whereas a checklist is used for observing the teaching-learning process, school environment, and infrastructure facilities of the schools.

Findings of the Study

Findings of Objectives I

To study the Challenges of schools in the Educationally Backward Block (EBB) of Mizoram with respect to the teachers and students.

Educationally Backward Block (EBB) schools are faces lots of problems in communication with the students and the lack of students' previous knowledge is still a big challenge. Though, in this block, there are a few schools that did not face problems in communication but faced problems with the lack of regular teachers and untrained teachers, especially in private schools and mission schools. The challenges in this block for schools are different from every angle and are believed that it can be improved accordingly based on their needs.

Findings of Objective II

To analyse the teaching-learning practices in the schools of Educationally Backward Block (EBB) of Mizoram.

The teaching-learning practices in the Educationally Backward Block schools of Mizoram are students-centric teaching-learning processes and are very conducive to the learning environment so that students may find more interest in their learning. The transfer of information, the conveying of skills, and the molding of attitudes, values, and conduct are the main goals of teaching-learning practices in the school. Teacher pays keen interest in every activity done by students as a whole and there is a close link between teachers and students. Students are found motivated by social values and self-discipline. The teachers are working very hard and they try different approaches for the learner to catch up with their present syllabus like taking extra classes and remedial teaching.

Findings of Objective III:

To identify Infrastructural challenges of schools in the Educationally Backward Block (EBB) of Mizoram

Finding related to School 1 Infrastructure

The school has satisfactory infrastructure facilities in order to enhance the teaching-learning process and provide support to the overall teaching-learning process. This school can improve some of the infrastructural facilities like creating learner corners and developing the garden within the school premises in order to improve the overall infrastructural facilities. The overall existing infrastructural facilities in the school are listed in the table.

Table: 1

Infrastructure of EBB School 1

Sl. No.	Infrastructure		Numbers
1.	Classrooms		2
2.	Library		1(well functional)
3.	Learning corners		0
4.	Laboratory		1
5.	Play Ground		1(volleyball court)
6.	Toilet	Boys	4
		Girls	4
7.	Drinking water availability		1 (filter)
8.	Garden		0
9.	Electricity		Good Electricity connection

Finding related to School 2 Infrastructure

School 2 has good infrastructure facilities order to improve the teaching-learning process and teachers are learners are making full use of the infrastructure. The school has a good classroom but some of the facilities were missing like lack of a learning corner and if this thing is improved the learner will have much more interest in their learning. The following are the existing infrastructure facilities of the school:

Table: 2

Infrastructure of EBB School 2

Sl. No.	Infrastructure		Numbers
1.	Classrooms		3
2.	Library		1 (well functional)
3.	Learning corners		0
4.	Laboratory		1
5.	Play Ground		1 (Badminton court) & (1) Table Tennis
6.	Toilet	Boys	2
		Girls	2
7.	Drinking water availability		1 water cooler
8.	Garden		School surroundings
9.	Electricity		Good electricity collection

Finding related to School 3 Infrastructure

School *3 has adequate infrastructure and they utilised it very well with the teachers and the learners. Also, the location of the school was perfect i.e., it is situated near the main road. If the school can improve some of its infrastructural facilities, then they can enhance their teaching learning process and learning. Government High School, Tlabung have the following infrastructure facilities:*

Table: 3

Infrastructure of EBB School 3

Sl. No.	Infrastructure		Numbers
1.	Classrooms		6
2.	Library		1 (well functional)
3.	Learning corners		0
4.	Laboratory		1
5.	Play Ground		2 (Volleyball courts)
6.	Toilet	Boys	2
		Girls	3
7.	Drinking water availability		1 water cooler
8.	Garden		School surroundings
9.	Electricity		Good electricity collection

Finding related to School 4 Infrastructure

The *school has a moderate infrastructure and a good study environment which supports the overall teaching-learning process to be satisfactory as compared to other EBB schools in Mizoram. School 4 has the following infrastructure facilities:*

Table: 4

Infrastructure of EBB School 4

Sl. No.	Infrastructure		Numbers
1.	Classrooms		4
2.	Library		1 (well functional)
3.	Learning corners		0
4.	Laboratory		1
5.	Play Ground		1 (volley Ball court)
6.	Toilet	Boys	4
		Girls	4
7.	Drinking water availability		3 filter
8.	Garden		School surroundings
9.	Electricity		Good electricity collection

Summary

The present study was done for knowing and understanding the situation of the Educationally Backward Block (EBB) School in Mizoram. In this research, the main objectives were to study the challenges of the school, teaching-learning practices and infrastructural challenges of the school, learning enrolment and characteristics, community ownership, and innovative and best practices of the school. The study basically used the qualitative analysis technique for achieving the objectives of the study. The study makes use of the case study technique to study the challenges and other related aspects of the schools in the Educationally Backward Block (EEB) of Mizoram. Along with this, checklist was also used to analyse the infrastructural aspect.

School 1 and School 2 are both located in Tuichawng village and the major challenges of these schools are language and communication. Learning and teaching suffer when there is a breakdown in communication. School 3 has a lot of experience, and being situated in Mizo village, it does not have the same communication issues as the other schools. This school suffers from regular teachers and adequate instructional arrangements. Due to the availability of guest teachers, the children do not suffer much. Apart from that, the schools suffer from a lack of adequate infrastructure. The School 4 also located in Tuichawng Village is a completely private residential school administered by Buddhists. All of the students and teachers are Chakma, so communication is not an issue.

Students are at the core of the teaching-learning process in Educationally Backward Block (EBB) schools, and teachers have a thorough comprehension of the students. They are also given full attention, and students receive assistance and support from all sides. The teaching-learning process is the same as others in the state but the difference is the students. Lack of previous knowledge is an immense issue for teachers. Teachers are also highly qualified and have great experience as well but the problem

arises because of the inadequacy of basic knowledge, especially in the field of science and mathematics.

The schools in Educationally Backward Block (EBB) also have good infrastructure the condition of the classrooms is really good and some schools are using green/whiteboards instead of black so that the students can have a clear sight and all the schools are having good electricity connection, proper drinking water, library, laboratory, toilets, etc. It is pretty fair to say that they got what they need in terms of infrastructure.

Table: 5

Master table

Sl. No.	Dimensions Observed	School 1 Tuichawng	School 2 Tuichawng	School 3 Tlabung	School 4 Tuichawng
1.	Availability of proper drinking water.	✓	✓	✓	✓
2.	Availability of proper sitting arrangement for the learner.	✓	✓	✓	✓
3.	Do the Headmaster and Teachers maintain school discipline?	✓	✓	✓	✓
4.	Does the school have a Library?	✓	✓	✓	✓
5.	Is there an SMDC (School Management Development Committee)?	✓	✗	✓	✓
6.	Does the school have a Science Laboratory?	✓	✓	✓	✓
7.	Availability of Science Practical Equipment.	✗	✓	✓	✓
8.	Does the school have a Computer Laboratory?	✓	✗	✓	✗
9.	Does the School have good toilet conditions?	✓	✓	✓	✓
10.	There is a special toilet for Physically Disable people.	✓	✗	✗	✗
11.	Learner enjoys teaching and learning.	✓	✓	✓	✓

Conclusion of the Study

Teachers and students in Mizoram's Educationally Backward Block (EBB) are working hard to catch up with pupils in other regions of the state. Students in the Educationally Backward Block (EBB) School in Mizoram attend remedial sessions to improve their academic performance. Despite the fact that some schools have obstacles in terms of communication between students and teachers owing to language barriers, others face infrastructure issues as well as a lack of ICT assistance for teaching and learning. One school in the Educationally Backward Block (EBB) of Mizoram is also suffering from the unavailability of the School Management and development Committee (SMDC), which appears to be one of the reasons affecting school operations. With the exception of a few schools, all schools in Mizoram's Educationally Backward Block (EBB) have enough certified instructors. In addition, teaching-learning processes in Educationally Backward Block (EBB) Mizoram schools must be enhanced, and new and relevant teaching approaches must be used.

Educational Implications of the Study

Major educational implications of the study are as under:

- The findings of the study can be used for the betterment of the schools of Educationally Backward Block (EBB) of Mizoram.
- The findings of the study can be used for providing suggestive measures to improve the existing gaps among the schools of Educationally Backward Block (EBB) of Mizoram.
- The findings of the study can be used to rectify the issues in the teaching-learning in schools of Educationally Backward Block (EBB) of Mizoram.
- The findings of the study can be used to improve the communication issues within the classroom and during the instructional process in schools of Educationally Backward Block (EBB) of Mizoram.

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Aspirations and Challenges of Mothers of Marginalized Early Years Children: Reflections from Bhopal City, India

Ritika Srivastava

Abstract

Global policies and research accept the significance of early years learning and care for children. This paper explores mothers' aspirations and challenges in caring for and educating marginalised early years children in the Indian city of Bhopal. The article examines children's care, safety, and living conditions by presenting the views of mothers whose children attend fee-free non-government and government organization-run ECCE centers. The idea of school readiness has also been elicited from the perspective of participant mothers. The data reveals the structural inequality embedded in accessing quality primary care and early literacy opportunities for marginalised children in India.

Keywords: *care and education, early years children, early childhood care and education*

Introduction

The significance of care and education in early childhood years is globally recognised as an enabling foundation for a child's physical, cognitive, and social development. The holistic and integrated program of nutrition, health, and early childhood education, which highlights the all-round development of a child from prenatal age to 6-8 years, is understood as Early Childhood Development or Early Childhood Care and Education (ECCE) program in India (Kaul and Sankar, p.34, 2017). Focusing on care and early learning, the National Early Childhood Care and Education Policy, 2013 highlighted that children should be best cared for by their families and communities. Multiple models of ECCE delivery, like *aanganwadi* centers, crèches, playgroups, playschools, nursery schools, kindergartens, preparatory schools, *balwadi*s, or home-based care are adopted in the Indian context to provide care and education to children from diverse backgrounds. Care and education are integrated in such a way that discussing one and ignoring the other seems like a superficial way of understanding child development.

In the care and education sector, in all public, private, and non-governmental spaces, females are primarily involved; and mothers of children are deeply engaged in caring and early learning of the children. Remarkably, when questions of care and education arise in academia, the voice of mothers of children is often silenced. Their work at home has been regarded as unpaid labor for years, and women as a group are regarded as disadvantaged to men in pay and in the condition under which they labor (Apple, 1989, p.55). Importantly socio-economic and disadvantaged background mothers have hardly listened on the care and education of their early years children.

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Therefore, the paper aims to explore mothers' aspirations and challenges in the care and education of their children.

The context

The researcher conducted her study at three fee-free ECCE centers in Bhopal city. The data was collected from a Government's Integrated Child Development Services run *aanganwadi* center, a Non-Government Organization that runs the *balwadi* for Pardhi children in the urban slum, and a Non- Government Organization run Child Care and Learning Center (CCLC) for children of migrant laborers at a construction site. Data was collected over a period of ten months and in two phases (the first phase of data collection was from December 2019 to February 2020; the second phase of data collection was from December 2020 to April 2021). The researcher interviewed mothers of children and did informal interactions with *aanganwadi*, *balwadi*, and CCLC supervisors, *aanganwadi* workers and volunteer workers. Interviews and informal interactions with all the respondents were conducted in Hindi language and translated into English language.

Methodology

The case study method has been used to explore the mothers' aspirations and challenges in the care and education of their children in their early years. For triangulation, the researcher added informal conversations with all ECCE center supervisors, *aanganwadi* workers, and volunteer teachers. Being an exploratory case study focusing on a few participants from the north Indian city of Bhopal, the findings cannot be generalised. Eighteen mothers participated in the study. The informal interactions with supervisors and volunteer teachers/*aanganwadi* worker on the challenges children and families face in accessing ECCE centers are also presented in the paper. All semi-structured interviews/ interactions were recorded and noted in the Hindi language. Later these were transcribed, translated into English, and coded by the researcher. The researcher identified key emergent themes elicited from the empirical data. These are as follows:

1. Care, safety, and living condition of children

All children who attend *aanganwadi* lives in pakka houses. The *aanganwadi* center is run in pakka room. The *aanganwadi* center and children's houses were in the same locality. Most families knew each other, and the children were visible to mothers while playing in a galli or lanes with children of similar age groups. Mothers of *aanganwadi*-going children reflected that they are primary caretakers of children and they do not work outside their houses. Mothers of children shared that their children are safe at the *aanganwadi* center. When children are at *aanganwadi*, mothers visit them and sometimes sit with them and feed them. In the *aanganwadi* center toilet facility is available but aanaganwadi worker and helper keeps it closed because with the use of children, it will get dirty, and officials come for a visit any time. They added that if officials find the toilet dirty, then they scold the *aanganwadi* worker and helper. *Aanganwadi* helper keeps the room neat and clean and ensures all children have washed their hands and eaten food.

A mother of a child shared that, at the *aanganwadi* center, the most vital thing is children learn to eat together. *Aanganwadi* worker shared that many children do not eat food at home but eat when they come to the center. Some mothers added that during the COVID-19 pandemic, children were at home, so many of them lost interest in eating food at home. As a result, children lose their weight considerably. They emphasised that in *aanganwadi*, children developed a habit of eating together. *Aanganwadi* worker emphasised that in *aanganwadi* she told children to eat properly, sit properly, and wash their hands before eating. She teaches children how to eat with a spoon. If children

eat big bites, then she used to tell them to have small bites. For instance, a mother of a child shared she feels so relaxed because of *aanganwadi* center. As she shared,

Krishna eats from aanganwadi … I pack his lunch for the school also (Krishna goes to the aanganwadi centre and a school). I am relaxed and I focus on sending him off to school. I have no worries of feeding him in the morning. (p.13, Int, 2021)

Children who attend *balwadi* center live in semi-*kachcha-pakka*-type homes. The children are from Pardhi community and labelled as de-notified tribal (DNT) family's children. They live in an urban slum. Their home has only one or a maximum of two small compartmentalized rooms. The roof of the houses was made of a tin shed, or a plastic cover was visible to cover the rooms. The houses were tiny and connected to *kachcha-pakka* asymmetrical narrow lanes. Children and families generally sit in narrow lanes/ galli in the locality. The narrow lane/galli of houses were connected to the main road. On the road Honda showroom, Khadims, Reliance trends, Morena Gajak, and many other showrooms were present. The *balwadi* center was in the neighborhood, run in a small pakka room. Toilet facilities are not available, but volunteer teacher distribute puffed rice, chick pea, bhel to children every day. As the center runs in a slum, pigs and dogs roam around, and children play in the same locality.

According to mothers of *balwadi* children, children are safe at the *balwadi* center because children and families know each other. *Balwadi* volunteer teacher stays in the same locality; therefore, she is very much aware of the challenges of children in accessing primary care and education. The volunteer teacher takes care of the children when children come to the *balwadi* center. She used to say to children, "Go home, wear a frock and shirt, and come, show me your nail, go home, wash your face, and come". She also advises the elder brothers and sisters to clean their younger ones. The vignette written below depicts one such instance,

Bhariri, focus on your sister too. You wash the hands and legs of your sister and see how her hand, leg, and face is. This girl was very beautiful. Her mother used to send her to balwadi in a proper way. Now her father's both kidneys are damaged, and her mother is doing only hospital-hospital and unable to concentrate on her. (26 Feb 2020, p.2, line no. 72-75)

The volunteer teacher emphasised that many children go for rag picking with their parents. She added that if any crime is reported in the nearby area, the police comes and enquires about the parents of the Pardhi community. Children used to go to fairs and *yatras* of festivals like *Shivratri, Navratri, Ganesha utsav* to collect food and money.

Child Care and Learning Center (CCLC)-going children live in *jhuggis* at the construction site with their parents. Their *jhuggis* are made up of tin sheds, and families shift jhuggi frequently from one location to another in the construction site. A few parents who work at construction sites have their homes in villages. Mothers' of CCLC children expressed that the children are unsafe at the construction site. CCLC does not have proper safety measures for children; lifts are yet to be constructed, and the stairs are rickety. There was no toilet or sanitation facility at the center. The center was running in a room full of concrete dust and waste, and there were no proper seating arrangements for children or volunteer teachers. CCLC was running on the third floor of the tower, and it was difficult and unsafe for children to climb the stairs to attend the center. Mothers of children added that at construction sites, children roam here and there, and construction waste and other metals cause frequent physical injuries to the children. As mentioned above, the stairs did not have handrails and were full of dust, stones, soil, and other concrete items, creating life-threatening conditions for children while climbing stairs.

Toddlers urinate on the sitting mat, which dries and later children sit on the same carpet. The researcher observed children playing and sitting mainly in this stinking,

unhygienic atmosphere. The volunteer teacher shared that during the COVID -19 pandemic, many CCLCs were closed because of funding crisis. She added that this CCLC is running because the owners pay her salary. She and her supervisor opined owners of construction sites must support the center with more funding. However, the volunteer teacher shares her fear that if she demands more support from the owners, they may close the CCLC immediately. The volunteer teacher expressed that if this center closes, mothers and children will be at risk in terms of some safety of children and support to mothers. On the safety of children, a mother of a child shared,

I always think about my children's safety because construction work always continues. When children come to the garden, then I feel safe. If children are in front of my eye, then I feel they are safe otherwise, here, at this site, there is no safety. Wherever you see, you will find stones, sand, or raw materials, and big vehicles also come because of construction work. These children go to 'school' (mothers call CCLC school) here. The 'school' (CCLC) is also unsafe for our children. There are no doors, and it is in an apartment on the third floor. There are lifts, space for lifts is also open, and work is ongoing. Lifts are open; no cloth, tin, or teepa (tin) covers them. Now electricity work is going on there. If the madam (volunteer teacher at CCLC) does not watch over the children carefully, if she remains careless, then there is a danger to the children. (CCLC_C5Rani)

The fathers of *aanganwadi*-going children work as security guards for night guard duty, tailor work, sales jobs, or fourth-class employees in a government office. Mothers of *aanganwadi*-going children perform household chores like cooking, cleaning, washing, and caring for their children. Most of the mothers and fathers of *aanganwadi*-going children got the opportunity to access school. Families of *balwadi* children went for rag picking; some were small-scale scrap dealers. Children who attend *balwadi*, their family members, including children, were earning members in most families. In groups, *balwadi* children go to the market, *yatras*, and temple during the festival, and they collect scraps and make enough money to feed family members. In a few families, elderly members work like gardening, cleaning, or sitting in a small gumti (tiny shop). Most of the parents of *balwadi*-going children do not get the opportunity to access school. The pressure of earning and household responsibilities are high on mothers of *balwadi*-going children; therefore, it is difficult for them to take care of children. While mentioning socio-economic conditions and the role of children at home, mothers of *balwadi*-going children responded,

We are from Asthang. Asthang is near to Sehore. We are staying here for 20 -25 years. We speak Pardhi language at home. We use handcarts for employment. We go for rag picking also, children also go with us. (Balwadi_C1_Twinkle)

We go for rag picking and selling every day. We cannot sit at home. If we sit idle, then who will feed us? (Balwadi_C4_Roshi)

Children attending CCLC are children from migrant families. Their parents and other family members migrated to work as laborers at the construction site. While parents work on the construction site, the children attend CCLC. The mother, father, and other family members are daily wage laborers. Mothers of migrant children shared that they are usually paid less than their husbands and other male members at the construction site. Mothers of children added that most of the male members drink alcohol, snatch money, and hit them and younger ones. At *jhuggis*, CCLC-going children are involved in cleaning, taking care of siblings, and sometimes going to earn with their parents. Girl children perform caring roles and homemaking responsibilities, whereas boys are indifferent towards caring and house-making activities. For instance, in the case of Purva , who is six years old and attends CCLC, her mother responded that she finds it challenging to take care of Purva. However, Purva supports her family by doing household chores and she care for her younger siblings.

Purva generally wakes up with me early morning at 6 o'clock. She brings water at home; she fills the water and then brushes her teeth. After that, she prepares herself to go to 'school' [CCLC], and come to 'school' [CCLC]. She likes' school' here; during lunch she only cooks food, cleans utensils, and takes care of her younger brother. There is a lot of work at home, so she does maximum work at home. (CCLC_ C1_Purva)

Mothers of *aanganwadi*-going children can read and write in Hindi; a few can read and write a few words in English. All mothers of *aanganwadi*-going children got the opportunity to access school, and most of the mothers are intermediate. Mothers responded that they have time to teach their children at home too. They said their primary responsibility is to care for the child, house, and other family members. Mothers of *balwadi* and CCLC-going children did not get an opportunity to access school; most were illiterate. Only three mothers of *balwadi*-going children went to school but did not remember that they studied and married early in life. They shared that their husbands are literate, but that is up to grade three, five, or, maximum eighth grade. Mothers of all three ECCE-going children emphasised that male members cannot care for the children because they think cleaning and caring for children is not their work. Mothers of *balwadi* and CCLC-going children reflected that they do not have enough time to care for their children because of work pressure. In poor economic conditions, mothers are forced to work at home and outside the house without support from family members and society.

The findings from this section highlighted that families struggle to provide primary care, safety, and healthy living conditions to their children. The participants shared their everyday struggle to feed their family members. Most of the *balwadi* and CCLC mothers were struggling to feed their children, and most of them expressed their deep concern about not being able to give enough time to their children. *Aanganwadi*-going children were in a better position compared to *balwadi* children and children attending CCLC. But for this, mothers are doing hard and unpaid labor at home, and historically, this work is considered natural for women. All the children in *balwadi* and CCLC, experience extreme poverty in their life. Moreover, they live in unsafe environments. The findings show a need for care-based programs with education to support families and children, particularly children from migrant and most disadvantaged families.

2. The idea of school readiness and experience of ECCE

UNICEF (2012) specifies school readiness in three aspects — children's readiness for school, school's readiness for children, and families' and communities' readiness for school (Kaul, and Bhattacharjea, 2019). Further, it is seen as, "the state of child competencies at the time of school entry that is important for later success" (Snow 2006, p.9). Though school readiness has been seen as the preparation of a child, school, and family, it is the yardstick for a child's future learning. Regarding readying children for school, most mothers in all three ECCE centers accepted that sending children to *aanganwadi*, *balwadi*, and CCLC is limited to preparing their children to sit in the school. They added that going to *aanganwadi*, *balwadi*, and CCLC-oriented children to stay at the center without a mother is helpful for school-going. But *balwadi* and CCLC-going children's mothers were unsure about sending children to school. According to them, if children are mature enough to earn, it is better to send them to work as it will help their family financially. Further, they added children above six years old could help them bring money home. Children go for rag picking, fairs, and temples to beg.

Mothers of the *aanganwadi*-going children were interested in sending their children to school. They were particularly interested in sending them to private schools because they believe that private schools maintain an environment of the English language. Further, they added that government school teachers are not smart as well as children

come from low economic profile families. Mothers of aanganwandi-going children stressed the need for private schooling because they firmly believe that government schools are of no-use to their children. They believe that children's education in private schools will make them independent. They shared that increased price/inflation can be seen everywhere, so education is necessary for a child to get a good job or earn well. A mother of a 5-year-old child has shared that during COVID -19 pandemic, she arranged a private tutor for her child. She added that her child is going to a private tutor for online classes; he performed well in online exams and understood classes better. As she responded,

My child has enrolled in school during lockdown also. He is studying online, and I am sending him to coaching for online school study. Recently, Krish was giving online papers, so he is going to coaching for that. Madam in coaching helps him in giving an online paper. Therefore, now I am paying 200 rupees for coaching and 250 rupees for school per month... I feel that if he is not going to school, then he should go to coaching. Coaching madam helps him in online school education... (Aanganwadi_E5_KS)

Mothers of *balwadi*-going children are unsure about sending their children to school. Their concern is that children cannot earn for the family once they start attending school. The opportunities are hardly available for the girl child due to the caring and house-making responsibilities. While asking about sending a child to school, the mother responded that she is uncertain about when and how to enroll children in school:

Now all the children are grown up, two have started going to work also. They have not studied anything from the beginning; now which year I should send my child to study? We are unable to send them to school, and what they will study; they did not start studying from the beginning; what will they study now, they should earn now? (Balwadi_EC2_Nitin)

Some mothers added that sending a child to school and a learning center is good, but they are doubtful about continuing their education. They also shared the challenges of their life,

Their age children are going...right? From my heart, I want to send my children to school, but how? I cannot, it is difficult for me. Their father is no more, he knew a few things. Now I do not remember anything to teach them. I do not know anything to make them learn. I can only try to send them to school when I have some support. (Balwadi_ E4_Roshni)

The supervisor of the CCLC shared a similar observation in the case of migrant children. He shared, "when children's hands and legs become strong, they go to work and earn for the family. Girl children mostly take care of their home and younger siblings and get married in the early thirteen or fourteen years of age". It was also observed that at CCLC, children learn to write '0' and '1' on the slate in the initial few days, and children of different age groups were writing '0' and '1'. The supervisor of CCLC responded that children are not trained to move their hands according to letters or numbers, so children learn to write only '0' and '1' in the first few days. The supervisor also shared that most families of children migrate from one construction site to another. The families return to work either at the same or another construction site. Because of this migration from one location to another, there is no continuity of learning. Children forget what they learned when they come back to the CCLC. They start learning to write '0' and '1' and forget because of learning disruption. Therefore, children of different age groups were seen to practice and write '0' and '1' at the CCLC.

Some mothers of *balwadi* and CCLC-going children shared the experience of sending their children to school. In most cases, children could not adjust to the school environment. A mother of a migrant child responded that she enrolled her child in a government school in the village, but the child did not stay because the teacher started beating him. She said that his child went to school for 6 to 7 days, then stopped

because he was uncomfortable in the school environment. She shared that her child is continuously going to 'school' (CCLC) at the construction site because he has friends from his 'background' here, *"bachche hain na iske mail ke, yaha iska mann lag jata hai"* (children are there of his background, so he adjust there).

Mothers at *balwadi* center and CCLC shared their concerns about not being literate enough to teach their children. They added about the financial pressure on the families and the inability to bear the cost of schooling. In the case of *balwadi* and CCLC-going children, the idea of school readiness of families and children needs to be looked at critically because it is connected with the livelihood challenges of the families. The experience and opinions of the participants prove that the socio-economic challenges of the families and communities deter them from participating in school. Socio-economic and disadvantaged conditions prevent children and families from accessing schooling. The finding highlights the need for schools to become inclusive spaces for all children. Schools must not push the child out of school by signifying them as unfit children from lower socio-economic and disadvantaged families. Hence, we should ask questions about the readiness of the education system, especially the nature of schools that are not ready to accommodate marginalised children. In the case of disadvantaged children, the primary focus should be on improving the family's socio-economic conditions so that children's care and safety are assured. Further, we also need to think about and prepare ECCE programs concerning the socio-economic background of the families, mainly focusing on the everyday challenge and struggle of mothers and volunteer teachers in caring for marginalised early years children.

Concluding remarks

Many psychologists and educationists have highlighted that survival, protection, health, nutrition, psychosocial, physical, and emotional development are essential to address the all-around development of a child. Numerous early childhood practitioners give importance to research that has highlighted that to gain skills for greater brain development, it is necessary for children to attend high-quality ECCE programmes (Love, Harrison, Sagi-Schwartz, Van Ijzendoorn, Ross, Ungerer, Chazan-cohen 2003; Early Childhood Care and Education, NCF Position Paper, 2006; Chopra 2012; Kaul and Shankar, 2017). However, the study shows that attending or accessing high-quality ECCE programs greatly depends on the children's and their family's social and economic capital. This study advocates that the social and economic capital in the form of parents' occupation, salary, literacy, and immediate living conditions plays a significant role in providing/withholding primary care and education of children.

The study indicates that a child is not free from the social, cultural, or economic orientation of the family and the neighborhood. In three ECCE contexts, children experience diverse care and education opportunities that depend greatly on their family's socio-economical obstacles or opportunities. The study also provides insight into the understanding of the social and cultural milieu of children and families, focusing on opportunities provided by the state to the families. The mothers are trying their best to send their children to school but are struggling with livelihood issues which make children devoid of appropriate care and a learning environment.

The participants' experience in the study proves society's collective failure in addressing children's care and education-related issues in a disadvantaged context. Scholars rightly observe that the well-being of children, and providing a protective and caring environment is a shared responsibility of societies and families (Madan, Srinivasan, and Pandya cited in Saraswathi, Menon, and Madan, 2018, p.126). This study demands justice and right-based development discourse (Sriprakash, Maithreyi, Kumar, Sinha, and Prabha, 2020, p.19), which

must emphasise the need for programs and policies to rethink/rework for the structural inequality in families of children. Therefore, the study concludes that justice and right-based discourse could be a way to provide better care and education facilities for all children.

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Understanding Pedagogical Dialogue: Indian context

Garima Aggarwal

Abstract

This paper presents a part of a qualitative study conducted in three Indian classrooms (Delhi) — state-run, private and private-progressive schools. The study aims to understand the varying degree of meaningful engagement that the teachers of the three selected schools are able to provide during the pedagogical dialogue. The objective is to understand the discursive ethos of the selected classrooms. For the purpose of analysis, theoretical ideas and constructs proposed by Bakhtin (1981, 1984) have been used. The analysis helps in determining the conditions in which dialogue, from a Bakhtinian perspective, is most likely to occur and what is and can be the role of the teacher in promoting and sustaining dialogue. It helps in the systematic exploration of the following specific questions like, how 'monologue' plays a pivotal role in the reproduction of 'hierarchical' relationships between the teacher and the students; how classroom processes manifest themselves in a dialogic environment; how active 'dialogic' orientations develop in students during classroom discussions, further helping in the construction of 'democratic' and 'egalitarian' classroom cultures; how the nature of 'multiple discourses' work together in classroom communication and the discursive space that it provides to students.

Keywords: *Classroom culture, discourse, monologue, dialogue, authoritative discourse, voice.*

INTRODUCTION

Exploring the pedagogical interactions in the classroom is crucial for understanding the diverse levels of meaningful engagement that teachers can offer to students. There are many leading theorists (Vygotsky, 1962, 1978; Bruner, 1996), whose work is considered influential and have been extensively used by many researchers (Barnes, 1993; Wells, 2000; Applebee et al, 2003) in understanding pedagogical interactions in the field of education. However, a strong case remains for initiating greater efforts in understanding the various nuances of teacher-student pedagogical interaction with empirical depth and clarity in the Indian context that explains how pedagogical interactions impact students' learning. This article presents a part of the study conducted in three secondary schools in Indian context (Delhi)— state run, private and private-progressive schools. The study attempts to understand the nature of the selected classrooms' pedagogical interactions and their varying degrees of meaningful engagement. This article uses evidence gathered from the study examining classroom interactions and the researcher's critical reflections upon the process to understand several common and distinct patterns of select classrooms' discursive ethos during pedagogical interaction. This further helps in gauging the conditions in which dialogue, from the Bakhtinian perspective, is most likely to occur and what is and can be the role of the teacher in promoting and sustaining dialogue?

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Interaction in an educative process is studied by researchers using the socio-cultural lens which foregrounds and explicates upon the significant role of 'social interaction' during learning (Vygotsky, 1962, 1978; Barnes, 1993; Rogoff, 1994; Bruner, 1996; Wells, 2000). However, a strong case remains for initiating greater efforts at understanding various nuances of 'dialogue' in the classroom. Bakhtin's philosophy of language (1981, 1984, 1986) has been considered rigorous and robust to be applied in the field of education for illuminating various aspects related to dialogue and its meaningful engagements (Cooper et al., 2012). For the purpose of this research, a detailed and systematic framework has been drawn using the following key constructs of Bakhtin's (1981, 1984) metalinguistic theory of communication: 'monologue', 'dialogue' and 'authoritative discourse'. Each of these have been used as frames and reference points to make meaning of the field data and experiences.

Dialogue and Bakhtinian Thought

Bakhtin writes extensively on the 'social nature of language' and discards its singular and objective view. He advocates that language impacts and gets impacted by the complex and historically developed dimensions of a society (Holquist, 1983). Bakhtinian elucidations make it considerably essential to include multi perspective and simultaneous existence of all meanings. The simultaneity of meaning can be explained with the help of Bakhtinian (1981) construct—'dialogue', which can be explained as the 'relative presence of ideas' i.e., one perspective or idea has to be positioned relatively with their ideological opponents, conflicts and dissimilarities to be understood in coherence (Holquist, 2002). 'Difference' for Bakhtin is essential for the presence of informed understanding of the participants. The same is not possible with 'monologue' (Bakhtin, 1984) where a singular 'voice' (perspective) is dominant resulting in the elimination of other voices (perspectives). Discussion which endorses such coercion of meanings gets developed into an 'authoritative discourse'. 'Discourse' is the ideational plane of a community which affects its participants and gets affected in turn, by its participants. Dialogue flourishes on the ideational plane of a discourse. An authoritative discourse eradicates dialogue and perpetuates only the voice of the powerful. On the other hand, a discourse becomes 'internally persuasive', when its participants are informed, self-assured and are allowed to develop critical minds. This consciousness helps in the 'ideological becoming' of an individual, which basically refers to how we develop our way of thinking and believing.

There has been growing interest in applying these ideas of Bakhtin in education amongst several scholars (Moraes 1996; Coulter 1999; Skidmore 2000; Miller 2003; Freedman and Ball 2004; Matusov and von Duyke, 2010; Barekat and Mohammadi, 2014). Research reveals how the Bakhtinian construct 'dialogue' presents a promising 'pedagogical tool' to create effective teaching-learning environments. A strong case remains for initiating greater effort to undertake classroom-based research from Bakhtin's metalinguistic perspective to enable a more nuanced understanding of classroom culture in Indian context and discourse.

Design of the Study

The study undertaken is qualitative research within the 'interpretivist paradigm' that attempts to produce contextual real-world understanding about the meaningfulness in learning and the discursive ethos in select classrooms. For the purpose of the research, three schools in the Indian setup from different administrative environments (to retain heterogeneity in classroom profiles) are chosen through .'purposive sampling strategy' — one of each—state-run school, private school, private-progressive school. Grade 8 classes of Social and Political Life (NCERT, 2006), are observed and the lesson transactions are recorded and

transcribed for one entire academic session by the researcher. The attempt is made to understand the entire data in terms of utterances instead of individual sentences. The researcher created a code for each utterance that further helped in creating 'critical links' between data collection and their explanation of meaning. The codes used explore thematic, pedagogical, instructional and responsive aspects of the data. All the utterances which could be assigned similar codes are then combined to construct 'episodes' under a particular theme for the purpose of writing.

Content analysis of the qualitative data obtained from the three classrooms highlight specific themes, including the everyday rituals of a classroom and the pedagogic approaches followed. These have been observed in the context of school type as well, however, without attempting any comparisons. One episode from each of the classroom is presented for the purpose of reference in the following section.

It can be summarised that a clear distinction was observed in the socio-cultural background of the students and teachers of the select classrooms.

Analysis

Classroom One: Authoritative Communication

Socio- cultural Background	Students	Teacher
State-run School	families of street vendors (17 students), hawkers (9 students), vegetable sellers (8 students) and site constructers (6 students). Hindus (16 students), Muslims (23 students), Sikh (1 student). Majorly talking in Hindi.	middle class Hindu family background, pursued a degree in education along with her graduation, 18 years of teaching from her first posting in government job. Teaches in Hindi
Private school	families of civil servants and corporate managers—total 24 students, families having their own teaching staff and administrative staff (8 students) Hindus (30 students), Sikhs (2 students) Majorly talking in English	wife of high paying civil servant and has been teaching in this school from past 7 years. She has a total experience of 22 years of teaching in several elite schools of Delhi. Hindu Teaches in English.
Progressive school	families having professional background. Hindus (16 students), Sikhs (7 students), Muslims (5 students), Christians (3 students) Using both Hindi and English.	pursued her master's degree both in education and political science and having teaching experience of 7 years. Teaching is bilingual.

Socio-cultural background of the participants

Box 1: Teaching for reproduction in exams

Context- The teacher starts the class by asking students to give a quick recap of the previous class in which she has already discussed about 'sansad'.

T: han bachcho… pichli class me mene bataya tha ki … ki… sansad ki avshyakta kyo hai. Koi batayega is baare me. Kaun bolega … Neha … Neha tum bolo (Tr: Ok children…I told in the previous class that…that…why is Parliament required. Can anyone tell about this? Who will speak…Neha..Neha, you speak)
Neha: (Silence)
T: Rajni tum bolo (Tr: Rajni, you speak)
Rajni: Madam, sansad rajye ko samprabhu banana ke liye avshyak hai. (Madam, Parliament is necessary to make the country sovereign)
T: Bahut badiya… aur kisiliye sansad ki avshyakta hai … (Tr: Very good…and why else is Parliament required?)
Anita: maam aapne ye bhi bataya tha ki pehle angrezo ne hum pe shasan kiya, jiski vajah se hum apne decisions nai le paate the. Jaise hume apni kaksha me apne liye decision lene ka adhikar hai vaise hi rajye ko bhi apne decisions khud lene ka adhikar hona chahiye. (Maam, you also told that earlier British ruled over us, because of which we were not able to take our own decisions. Just like we have the right to take decisions in our class for ourselves, a state should also enjoy the right to take decisions for itself)
T: vo theek hai. Mene ye bataya tha ki ek rajye ko samprabhu banne ke liye yeh avshyak hai ki use apne nirnay lene ka adhikar ho. Vo baat rajni bol chukii hai. Paper mein vo sab hi likhna jo mene abhi bataya. Baki sab to me tumhe samjhane ke liye bol deti hun. (Tr: that is alright…I had told that in order to become sovereign, it is necessary that a state has the right to take decisions for itself. That point has already been spoken by Rajni. You're supposed to write all that I have told in the examination paper. Everything else is spoken by me just to help you understand).

Chapter: Chapter 3: Why do we need a Parliament? Social and Political Life – III, Grade 8, NCERT (2006).

The above episode highlights Anita's attempt to share her understanding of the concept of 'sansad' by talking about the significance of taking decisions for oneself in a democratic country. However, the teacher dismisses Anita's personal understanding and reiterates the need to 'mouth' definitions, given in the textbook. Bakhtin (1981) uses the phrase 'unitary language' for usage (of language) which is centripetal/centralising in its nature. For Bakhtin, such language "is posited at every moment of its linguistic life and is opposed to the realities of heteroglossia (pp- 270)". However, language which is culturally responsive and relevant would also partake in centrifugal forces. The teacher can be observed considering herself and the reference books as the only valid sources of information. Clearly, such pedagogic communication curbs student initiative, rendering them into a kind of passivity. Bakhtin calls this a monologue – that which rejects experiences and viewpoints not in alignment with the perspective of the powerful participant (teacher in this case). Such teaching results in teaching without mind and the creation of an 'authoritative discourse' (Bakhtin, 1981).

Classroom talk witnessed in the present classroom can be examined through the lens of another theoretical idea proposed by Bakhtin (1981) — the difference between 'novel ' and 'epic '. By drawing upon the genres of a novel and the epic, Bakhtin emphasises the significance of inconclusiveness that should remain within a 'discourse' for its further growth as 'dialogue.' The discourse should constitute language which is not unitary and centripetal in nature. Using definitions, emphasising on correct

answers and the primacy of facts over lived experiences tends towards the centripetal force of language, hence resulting in an 'epic'-like genre instead of 'dialogue.' Such characteristics of classroom talk creates a kind of indispensability for conclusiveness and finality; coercing students into believing that knowledge is a given, is neutral and is therefore correct or incorrect; and has little to do with personal and social meanings.

Classroom Two: Derailed Attempts to Create Extended Conversations and Dialogue

Box 2: Ignoring student responses

Context- The teacher discusses some of the laws of the Indian state, how these are made and enforced.

T: So… law system in our country…ok … Laws are enforceable on all…first of all…!! Laws ensure… right things happen around us. If somebody is jailed then what do we think about that person?
Yashi: mam that person must have done wrong…
(Couple of words from behind, could not record)
T: yes so it is called Violation of law. Yes or No?
Sts: (Chorus) Yes Mam…
T: Next they have written about ancient India… That all communities had separate set of laws… they were innumerable in number and at times overlapping also…
Natasha: Mam why overlapping…
T: …Next in British era a number of laws were enforced upon India. These laws were arbitrary in nature. They have talked about Rowlett Act. What is this? Can somebody tell…?
(Silence)
T: What is this…we talked about this before … come on who will tell … You? Yes tell
Chandan: Mam they were imprisoned without any crime.
T: no not crime…without due trial in court. Next …Now our constitution serves as the basis of our legal system… you people following… yes or no
Sts: (Chorus) Yes mam.

Chapter: Chapter 4: Understanding Laws, Social and Political Life – III, Grade 8, NCERT (2006).

In this episode the teacher rushes through the content and does not build on the students' responses. Bakhtin argues that monologue stems from hegemonic control (Holquist, 2002). According to Bakhtin, such talk eliminates plurality and variety in thought which are essential for dialogue. The teacher in the second classroom (from the private school) can be seen 'seeking' students' participation. What becomes quite clear soon enough, is that none of the questions asked by the teacher lead to any extended conversation within the class. Instead, each of the observed classroom conversations tend to take the shape of a 'monologue'. Even though the teacher initiates discussion by asking a question, she is seen to dismiss students' responses by either turning a deaf ear or by questioning its relevance. The teacher's emphasis on 'correct' answers or on responses strictly from the textbook disallows any conceptual engagement on the matter being discussed. The consequence is the emergence of an authoritarian dominant voice of the teacher and the degeneration of 'apparent conversations' into monologue.

Classroom Three: Dialogical Communication

Box 19: Structuring meaningful classroom discussions

Context- The teacher is discussing the significance of Judiciary and is observed quoting examples of court judgements that have directly impacted students' lives.

T: Students what do you think about corporal punishment. …
(After a few seconds) … Do you all know that corporal punishment is banned in schools?
Lovely: yes mam. It is justified also…
T: what is it Naveen…?
Naveen: ma'am, it says that it is not allowed to beat the students …
T: Yes it bans physical punishment to students.
Kritika: Mam it's a court decision. And teachers used to beat students on …petty issues. Now it is banned.
Shivani: Why teachers would do that?
T: there were many such cases where teachers were found slapping or beating ruthlessly… one way of thinking was to control students by doing this I suppose.
Prateek: it's for all kinds of schools… we have such cases in private schools…?
T: Why not … why do you think that private school teachers would not be indulged in such practices?
I have heard many such cases … where teachers believe that students don't learn without physical punishment …
T: What other cases you have heard about in your neighbourhood, family and friends… or you have read something in newspaper. This will help in understanding the topic better.
Kritika: Mam my family … we are fighting a case against our tenants. We gave them two rooms upstairs to live. Now my brother is married and we need those two rooms. But they are denying to leave the room now.
Paras: What are they saying … it's your place you can take it back.
Kritika: yes but they feel that they have lived here for 11 years and now they cannot be asked to leave the place like this.
T: okay … the court must be looking at all the aspects of the case and will give its decision.
Shivani: Ma'am these days a lot of mention of courts… specially in newspaper …
T: what did you read ,,,
Shivani: Mam there was a case … Aarushi hatyakand … but the case is just on and on …
T: it takes time to visit and understand all the evidences and all of them do not come up in one time also… a thorough discussion and debate is also needed over each statement and evidence.
Shivani: yes mam, that is important … but it takes way too much time.
T: yes, that is considered a drawback of Indian Judiciary system. The two cases that we just discussed … they tell us that Judiciary basically helps in resolving disputes … can disputes be only amongst individuals?
Prateek: No mam … My papa is fighting a case against a school and CBSE… actually he and his friends are fighting it together … My brother is not allowed to sit for 10th examinations … he is mentally retarded and the school is not allowing him to leave maths… they are saying CBSE has no policy for this …
T: ok … so there can be disputes amongst individuals, individuals and institutions,

individuals and state as well … Prerna: Mam here they write between two state governments and centre and state government as well… T: yes … can we find out a few examples of such cases for tomorrow's class … (many answers in yes from the students) So why do you think it is important to have courts …. What kind of damage we can have in our democracy if we don't have them … Naveen: Ma'am, it protects us and our rights … if something wrong happens that is against our rights, we can go to the courts … Kritika: But ma'am … we need a lot of improvements … cases in courts take a lot of time … T: let's write what kind of improvements can be made to strengthen our Judiciary system and share that on our article board.
Chapter- Chapter 5: Judiciary, Social and Political Life – III, Grade 8, NCERT (2006).

In this episode the teacher asks students a question which requires them to probe the motives for banning corporal punishment. This example provides a good entry point for students whose life at school is directly impacted by this legal provision. It is evident that the teacher does not ask questions that demand mere reproduction of information. Instead, she encourages students to respond spontaneously and then reflect on their own thinking about the subject. While analysing the dynamics of language in learning during English classes from Bakhtinian perspective, Nystrand (1997) points out that the kind of questions asked by teachers play a major role in enabling dialogue inside classrooms. Teacher-student interaction presented in the Box above, indicates that the teacher encourages students to reflect on situations and then asks them to share examples of court cases from their daily lives. She views herself as a participant who also needs to continually think and re-think about issues. The episode indicates that students do not simply respond to the questions of the teacher. Instead, they themselves contribute conceptually in the ongoing discussion through a sharing of their lived experiences. For example, Shivani mentions the case of '*Aarushi hatyakand*'. Another student shares her experience of her father filing a case against the CBSE. This episode shows students sharing their viewpoints with fellow students and with the teacher. The teacher builds on the student's idea and designs an assignment for them to write on how and what kind of improvements can be made to strengthen the judicial system. The teacher does not come across as the sole authority of either the ideas discussed or sitting in judgement of students' opinions and thinking. She is nevertheless seen as a responsible figure of authority (not authoritarian), explaining to the students the rationale of discussing a particular issue and for taking certain positions. Students are expected to engage with the several layers that make up an issue through rigorous enquiry using concepts and sub-concepts; and most importantly, without any attempt to categorize student responses as either 'right' or 'wrong.' The pattern of questioning deployed by the teacher, apart from sustaining engagement and dialogue, helps students develop several capacities and dispositions, such as, the ability to explicate their own thoughts and articulate with clarity, the ability to critically analyse a given situation, to refocus on a problem situation and revisit it with new perspectives to gain better insight, to collaborate and learn to listen to one another without necessary intervention by the teacher; to explore possibilities and to express themselves in an uninhibited manner. This, as elucidated by Bakhtin (1981), is 'ideological becoming', where individuals learn to develop ways of understanding the world.

Discussion

The Absence of Dialogue

Analysis reveals that the government school classroom reflects a clear inclination towards the construction of 'monologue', where the teacher's 'voice' dominates and is presented as authority. This occurs through several pedagogic measures, including a concerted emphasis on 'memorization of definitions', mouthing 'textbook' language; encouraging the reproduction of 'correct answers' over conceptual engagement; and rewarding 'primacy of fact' over the lived experiences of students. The primary reason behind such a classroom ethos is identified to be the belief of the teacher in 'transmission of information' as the key mode of instruction.

In the private school classroom, the teacher is seen making several attempts to seek students' participation. Close scrutiny shows that the participation of students is largely sought through the posing of routine questions such as – information-based questions demanding recall or reference to text; questions requiring students to make simple applications of concepts and questions that seek validity of students' responses. Bakhtin (1984) criticises the view of knowledge as independent from individual experiences. For Bakhtin "truth is not born, nor is it found inside the head of an individual person, it is born between people collectively searching for truth, in the process of their dialogic interaction" (pp- 110). Most of the questions asked by the teacher can be referred to as 'display questions,' where just a display of knowledge is demanded as against critical application of concepts, as argued by Long and Sato (1983). In the private school classroom, students were observed to respond to such questions because of the obligation to respond to the teacher, not because they are engaged. Meaning making as explained by Bakhtin (1981), happens when a person engages with her immediate surroundings and creates personalized understanding.

Role of Monologue in Reproduction of Hierarchy

The teacher in the government school puts forth a conception of learning that foregrounds memorization and retention as the only way to gain knowledge. The students do not consider it significant to know what they gain from lessons in terms of understanding; they too seem to be interested in knowing how to memorize important facts and information for the purpose of qualifying examinations. Similarly, the 'authoritative discourse' created by the domination of the teacher appears to obstruct other voices and restrict students' thinking in the Private school. It would not be wrong to say that most students are overwhelmed and hence feel disempowered by the prevailing 'authoritative classroom discourse'. It can be inferred through analysis that students were gradually conditioned to this pattern of classroom talk. Students are seen undermining their own responses, each time acknowledging the unquestioned authority of the teacher by singing in chorus 'yes ma'am'. Classroom discourse and culture that gives premium to the overwhelming authority of the teacher and disregards students' thinking and lived experiences amounts to a denial of their 'epistemic selves'.

Ecology of a Dialogic Classroom

Conversations in the progressive school classroom exhibit the generation of meaningful and contextualized dialogue between the teacher and students and among students within the familiar and lived experiences. Students in the progressive school classroom are seen identifying themselves with what is being discussed and are hence involved and engaged.

Observations reveal that the progressive school classroom permits the expression of 'multiple viewpoints' that contributes to the richness of discussions by inviting students to 'dialogue'. These viewpoints were not only

viewpoints of individual students and the teacher, but also of the textbook, references to which were continually made by the teacher and students. While the teacher's viewpoints clearly emerge as the central guiding force within the discourse, students share their life experiences, ask questions, and express doubts and beliefs in a fearless manner. A multi-voiced discursive environment (classroom in this case) that presents reality in manifold ways creates scope for diverse socio-cultural lived experiences of participating students to enter the classroom discourse (Bakhtin, 1981).

Classroom discussions include several pedagogical elements, such as prompting students to revisit concepts; encouraging them to stretch their imagination, share personal experiences, evaluate their own and others' views, and engage in inferential reasoning and reflection. The teacher in the progressive school classroom is often seen stimulating students' thinking by asking questions that require them to reflect on their assumptions and the normative views they hold. The questions asked by the teacher not just seek students' participation but helps in generating 'social talk' inside the classroom. 'Social talk' according to Bakhtin (1981) is a natural way for participants to be engaged in an on-going discourse. Students in the progressive school classroom were engaged meaningfully and dialogically. Dialogue thus generated, leads students to express their individual voices assertively.

Dialogue is seen manifesting itself through critical pedagogical practices followed by the teacher: allowing the expression of doubts, observations, and beliefs; encouraging listening and acceptance of other's perspectives; contextualizing content with students' lived experiences; critically analyzing subject matter given in the textbook; and weaving classroom discussion around text material, students' varied responses and teachers' own views, collaboratively.

Teacher's Role in Creating a Dialogical Classroom

The dialogic environment in the progressive school classroom demonstrates an open, democratic, and egalitarian relationship between the teacher and students. The teacher in the progressive school is observed using 'talk' effectively for various classroom activities. It is not a teacher driven conversation, but an exchange of ideas occurring organically amongst all participants. Findings highlight the critical role of the teacher in mediating textbook knowledge; and the potency of transforming traditional authoritative schooling into a dialogical discursive environment that recognizes students as epistemic entities, capable of developing rational independent thought.

Engaging with Ascribed Identities

During the study the researcher found various other social factors and contestations that impact the Teacher- Students Interaction in the classroom. Socio-cultural identities that students bring to the classroom are further mediated by the culture of the classroom and its discourse. Every classroom too is a socially constituted. Interaction, which is relational in nature for Bakhtin, develops interdependently within the social environment of the classroom. As argued by Wortham (2004), when students and teachers discuss subject matter, students get socially identified as recognisable types of people. In a monological classroom, teacher-student interaction is seen embodying social prejudices that lead towards discrimination on the basis of ascribed identities such as religion and caste. As a result, children may attribute inadequacies pointed in them by the teacher and peers, to their social background. This internalisation of low self-worth silences them. It can be argued on the basis of this research, that pedagogic communication plays a critical role in constructing and re-constructing the social environment of the classroom as well as the sense of self of students.

Teachers of the government and the private school classrooms appear to reproduce normative voices of the cultural and semiotic world through a monologic classroom environment and discourse. Some examples of normative voices include the following: "majoritarian religion defines Indian identity; 'normal' Muslims are different; students from lower socio-economic backgrounds are deficient in learning; the marginalised sections of society require our sympathy." Observations reveal that an authoritative discourse within the monological classroom encourages students to accept normative voices even when some students express counter voices.

Students in a progressive school classroom however, are encouraged to introduce novelty in their internalisations in ways that have the potential to transform cultural practices. Students are encouraged to think critically by exploring alternative perspectives and examining their own notions. However, instances of conflicting perspectives such as gender highlights the fact that the teacher found herself unable to handle the complexity of the discourse. In this case, dialogue becomes difficult to sustain. However, a classroom that is predominantly dialogical in nature holds the promise of creating independent thinking and a disposition to engage.

Conclusion

The present paper captures several classroom conversations to understand the culture and discourse of select Indian classrooms. Teachers who foster authoritative discourse within their classrooms, create classroom environments that result in explicit positioning of students at a loss of their voice. Teacher's control in such a classroom obstructs students thinking that further results in students doubting their own experiences. Teachers, on the other hand, who foster dialogic relationships with their students, create classroom environments more conducive to meet the academic, emotional, and developmental needs of a learner. Students' empowered reasoning around various social and political issues further help in the construction of 'democratic' and 'egalitarian' classroom. Active responses from students lead discussions and their directions is determined during various debates and negotiations.

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Developing a Standardized Scale to Measure Teachers' Perception and Attitude Towards Apprenticeship Embedded Degree Programme

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Abstract

In the framework of the Apprenticeship Embedded Degree Programme (AEDP), as envisioned in NEP-2020, this study aimed at developing a standardised Scale Towards an Apprenticeship Programme. Hence, the objective is to construct, develop and standardisethe Teachers' Perception and Attitude Scale Towards Apprenticeship Programme" (TPAS-TAP). The researchers used a five-point Likert scale in this study (Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree). 310 teachers from different high schools, colleges, and universities (assistant/associate/professors) working in India's West Bengal's "Rarh Region".The data were analysed with the help of a quantitative research technique (through statistical software). The final TPAS-TAP version has 25 items in it after the item analysis. The scale is appropriate for the study, according to Cronbach's Alpha, which was 0.856. The Factorial validity and the Split-half technique were revealed to be 0.84, indicating that the study was acceptable and reliable. The researcher employed the structural equation model and goodness of fit index (CMIN/DF= 2.981) to analyse and study the relationship between components. The RMSEA was 0.040; IBM SPSS (V-28) Amos software was used to analyse the Scale. This research can provide valuable insights for policymakers and researchers on shifting teachers' perspectives and attitudes as stakeholders. Additionally, it can shed light on the various dimensions that can be utilisedto effectively manage the new UGC degree program, which incorporates an apprenticeship, and comprehend the process of constructing and developing research scales.

***Keywords**: Development, Perception, Attitude, Construction, Apprenticeship Scale, TPAS-TAP*

INTRODUCTION

Klausmeier and Goodwin quoted, "Good standardized tests must meet the criteria of validity, reliability and usability."A study on the "Future of Indian Apprentices" conducted by Team Lease EdTech, a prominent B2B education technology company, has shed light on the current state of India's degree apprentice ecosystem. According to the report, only a handful of universities in India offer bachelor's degree apprenticeship courses, with approximately 63,000 active bachelor's degree apprentices. However, the National Education Policy 2020 has opened

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doors for more universities to introduce bachelor's degree programmes (GOI, 2020).As per the UGC Guidelines, Higher Educational Institutions (HEIs) now have the choice to incorporate apprenticeship or internship programs in any UG degree program that the UGC identifies. This move focuses on outcome-based learning in degree programs and allows students to demonstrate their job-ready skills (H M Naveen, 2022). NEP-2020 Higher Education has brought guidelines from the Apprenticeship Embedded Degree Program (AEDP) for more student-oriented career development (Gorai & Angadi, 2021). According to Marksteiner et al. (2013), social science research has proven the relevance of examining interactions from the perspective of individuals involved in the event and investigating how they perceive, interpret, and bias (Aronson, Wilson, and Akert, 2010). Perception and attitude are two subjective aspects that might influence the effectiveness of students' learning and are closely related to teachers (Calderon et al., 2018). When discussing the concept of Attitude, Baldwin (1901-1905) was the first to describe it as a "preparation for a series of actions or attention". He also suggested that attitude can be expressed through various constructs. Latchanna and Dagnew (2009) define attitude as a mental state that encompasses feelings and beliefs and is an essential concept for comprehending human behaviour. Beliefs are linked to success in the implementation process. Lennartsson (2008) states that having the right attitudes and perceptions is crucial for enhancing students' competency in the learning process. In today's education system, the way students and teachers think, their abilities, creativity, problem-solving skills, attitudes, and perceptions all play a significant role in improving any subject. The concept of attitude, first introduced by Thurstone in 1931, is centered around an individual's emotional response to a psychological object. Allport's 2008 summary highlights how mental and nervous states can dynamically impact positive or negative attitudes. Handayani (2011) notes that an object's perceived goodness or badness influences how a person behaves towards it. Perception plays a critical role in human knowledge and communication, as Efron (1969) argued that all conceptual knowledge depends on primary consciousness. In determining the value of something, human perception is key in assessing whether it is beneficial or detrimental to society. As such, researchers have placed significant emphasis on studying perception and attitude. Consequently, the researchers were informed about the study to understand and examine the teacher's perceptions and attitudes concerning AEDP. Therefore, the "Teachers Perception Attitude Scale-Toward Apprenticeship Programme" (TPAS-TAP) was developed. As a result, adopting research procedures for data collection and standardised instruments for measuring perceptions and attitudes may greatly benefit such investigations (Avasthi, Varma, Nehra and Das 1992).

The Objective of the Study

- To develop and standardize the "Teachers' Perception and Attitude Scale -Towards Apprenticeship Programme (TPAS-TAP).

Methodology

This was a quantitative systematic developmental study (Khan, Nabi, Khojah, and Tahir, 2021). The study was conducted using an online survey questionnaire as the primary source of data collection. Investigators employed the Snowball sampling method to select the study participants (Khan and Rahman, 2016), where each participant was asked to refer someone who could be part of the survey based on the eligibility criteria. For constructing and developing this scale, the authors used various statistical techniques. On numerous data sets obtained at various phases, descriptive statistics, EFA with a reliability test, and CFA with reliability and validity assessments were performed using jamovi version 2.3.2 (SPSS), SPSS-28, and AMOS statistical software packages.

Participants and Sites

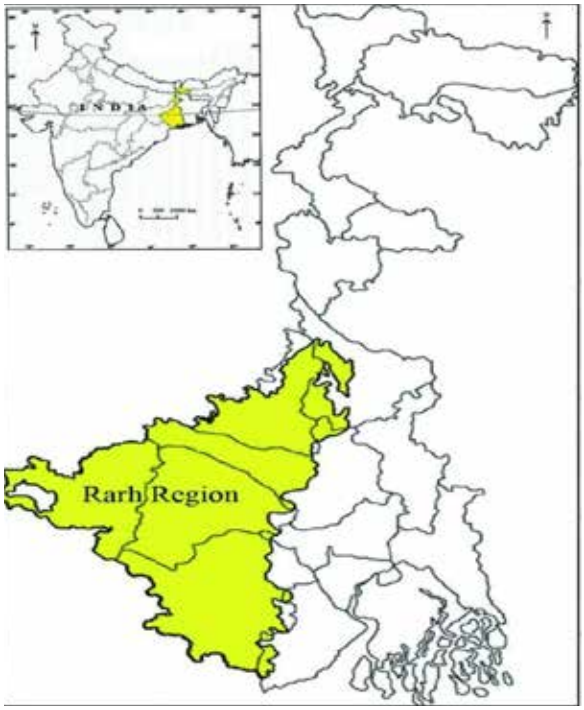
To obtain a precise understanding of the context of Apprenticeship Embedded Degree Programme (AEDP) in higher education, a group of 310 teachers from various Educational Institutions (EIs) situated in Birbhum, Paschim Bardhhaman, Purba Bardhhaman, Jhargram, Bankura, Purulia, and the north-western regions of Paschim Medinipur in the Rarh area of West Bengal, India (Figure 1), were selected as participants (Chakrabarty and Mandal, 2022). The survey was administered to teachers from Educational Institutions (EIs) affiliated with State Government, Government grant-in-aid, Local Bodies, Private unaided schools and general degree colleges. The sample included male and female teachers from various institutional areas and academic disciplines such as arts, sciences, and commerce. The survey was translated into English for ease of comprehension. The demographic details of the participants are presented in Table 1.

Table1

Demographic details of the Respondents (No. of Respondents=310)

	Demographic/ Predictor	Sub-Demographic	Used code dataset	No. of Frequency (N)	Percentage (%)
Teacher	Gender	Male	1	171	55.16
		Female	2	139	44.83
	Institutional Area	Rural	1	133	42.90
		Urban	2	177	57.09
	Educational Stream	Arts	1	153	49.36
		Science	2	107	34.51
		Commerce	3	50	16.12

Figure 1: Location Map of the Study Area



Source: Chakrabarty and Mandal (2022)

Background of Scale Development

Scales are usually produced due to the following factors: a practical or commercial requirement, theoretical advancements, or empirical progressions (Irwing and Hughes, 2018). A scale, often known as a test, is essentially a standardised questionnaire or a list containing test items that must be administered and scored by strict guidelines. Its purpose is to assess one or more underlying psychological constructs or latent variables that are not readily apparent (Fabrigar and EbelLam, 2007). The building or developing a scale is gathering and putting together the most suitable components or aspects of a given architecture that serve as test questions (Chadha, 2009). Tripathi (2003) outlined five steps for the scale development: (1) defining the measured trait assuming it is unidimensional; (2) generation of a pool of potential question items, preferably 80–100, rated on a 5- or 7-point (from 1 = strongly disagree to 5/7 = strongly agree) Likert response scale; (3) review and rating of the items by a panel of experts on a 1–5 scale on how favourably the items can measure the construct (from 1 = strongly unfavourable (pilot test). Following the standard scale development process proposed by Tripathi (2003); Kyriazos and Stalikas (2018); Sharma et al.(2022); and Kundu et al. (2022), a scale (TPAS-TAP) was developed to assess teachers' perceptions and attitudes towards AEDP. Using ideas from previous scale development methodologies, the researcher created and implemented a Scale Development Comprehensive Flowchart (SDCF) as shown in Figure 2. This illustrates that the overall process has several parts, and each further subdivided into a few additional sub-steps.

Figure 2: Scale Development Comprehensive Flow chart (SDCF)

SDCF presents the systematic construction and standardization process of the research tool utilized in this study. The research tool was developed following a series of well-defined steps, which are clearly outlined below.

Conceptualisation of the Tool

Selecting a topic and defining objectives are crucial steps in conducting research. Researchers must then identify the appropriate population and sample and the necessary research tools for data collection (Arunkumar, 2016). If suitable tools are unavailable, researchers may create their own in consultation with an expert. In this particular study, the "Teacher Perception Scale - Towards Apprenticeship Programme" (TPS-TAP) and the "Teacher Attitude Scale - Towards Apprenticeship Programme" (TAS-TAP) were jointly developed by the researchers to align with their objectives. To design these instruments, the researchers extensively reviewed textbooks, reference materials, journals, periodicals, newspapers,

among others, to gain a better understanding of teachers' attitudes and perceptions. The initial list of 43 items was then condensed into seven dimensions based on the identified actions.

Preparation of Items

Developing tools began with a study of current research studies, national and international reports, recommendations, legislation, and the availability of published tools (Sharma et al., 2022). From this study, the researcher grasped key dimensions of apprenticeship in the Indian context and developed a few items. In this article, the national government of India and local agencies are analysed for their implementation of vocational education and skills training programmes for indigenous women (Dagar, 2022). Through this analysis, readers will understand the value of apprenticeship, vocational education, and skills-based education for all students and some of the prepared items. (Lasrado and Zakaria (2019); Pepper et al. (2022); Sharma and Nagendra (2016); Lester and Bravenboer (2020); UUK, (2019); (Ryan and Unwin, 2001); UGC Guidelines for Higher Education Institutions to Offer Apprenticeship/Internship Embedded Degree Programme, (2020), and Mulkeen et al. (2019) are indeed a handful of good studies that provide evidence for the need to understand perceptions and attitudes,after undergoing this complete analysis; the researcher recognised the growth of crucial elements pertinent to the study, including awareness, usefulness, breadth, access and equitable chances, social connectedness, and learning outcome—quality control, competence, truthfulness, assessment, etc. Scale construction and development used these elements as a reference. Another crucial phase in creating a tool is item wording since wording a question might impact the result (Saris and Gallhofer, 2007). The researchers benefitted from the insights of a team of 14 highly-regarded education experts, including 5 professors, 4 associate professors, and 5 assistant professors from renowned institutions such as Visva-Bharati, Aligarh Muslim University, South Bihar Central University, NCERT (RIE), Central University of Gujarat, and Delhi University. The 'TPS-TAP' and 'TAS-TAP' tools were further refined with contributions from prestigious universities such as Jamia Millia Islamia, Savitribai Phule Pune University, and Guru Gobind Singh Indraprastha University. The experts recommended all constructs and rated using a 5-point Likert scale, with scores ranging from 5 (strongly agree) to 1 (strongly disagree) and vice-versa for negative items. After researchers Finalized dimensions for this tool which is discussed below. The study involved 43 statements for both the collage TPS-TAP and TAS-TAP, with the number of objects in each dimension outlined in Table2.

Dimensions of Perception

- ***Awareness (A):*** To be aware is to possess consciousness of something. Constructs can be within the knowledge or awareness of teachers, as noted by Kumar and Amin (2021). Further more, stakeholder awareness can play a critical role in the successful implementation of rules, regulations, norms, and other such measures. Based on this crucial aspect, the researcher can confidently develop items for their study.
- ***Breadth (B):*** The AEDP program offers a flexible duration for prospective learners, as per established guidelines. To convey the same idea, some researchers prefer to use the term "breadth." Fuller & Unwin's (1998) study on "Creating a Modern Apprenticeship: A Critique of the UK's multi-sector, social inclusion approach" highlights the significance of a diverse group of apprentices possessing a comprehensive understanding of their future roles, knowledge, and skills to meet evolving professional expectations. Based on this, researchers have devised various criteria to evaluate perception towards AEDP.

- ***Access and Equal Opportunities (AEO):*** Moreover, Modern Apprenticeship providers should actively develop equal opportunities policies and practices to ensure that participation is extended beyond non-traditional groups (Fuller and Unwin, 1998). Unwin and Wellington's (1995) account of the early implementation of the prototype programmes suggests that the challenge of extending the programme to non-traditional sectors should not be underestimated. So here, the researcher also used "Access and Equal Opportunities" as a dimension for the perception of stakeholders and in the Apprenticeship/Internship embedded Degree Programme's UGC guidelines have mentioned in the general Provisions.
- ***Learning Outcome (LO):*** The scope of the Apprenticeship/Internship Embedded Degree Programme offered by Higher Education Institutions has been clearly outlined in the UGC guidelines. Learning Outcome has been identified as a crucial factor in this programme's success, as stakeholders' perception of the AEDP is heavily influenced by the researcher-designed learning outcome-related items (UGC Guidelines for Higher Education Institutions to Offer Apprenticeship/ Internship Embedded Degree Programme, 2020).

Dimensions of Attitude

- ***Quality Management (QM):*** Hodkinson and Hodkinson conducted extensive research on the crucial matter of VET programme quality in 1995. According to Fuller and Unwin's 1998 perspective, a "modern" apprenticeship should establish process criteria to enhance the learning experience's quality and outcome indicators to track results. To gauge stakeholders' attitude towards AEDP, the researchers confidently utilized "Quality Management."
- ***Truthfulness (T):*** The variations in truth-telling stem from the complex interaction between autonomy, beneficence, education, and stakeholders. In today's society, stakeholders tend to be cautious about being misled, as noted by Bernard Williams in 2010. This attitude can be used to support the researcher's perspective on AEDP.
- ***Assessment (A):*** The UGC guidelines for the Apprenticeship/Internship embedded Degree Programme have outlined certain requirements, including assessment. The researcher has focused on the AEDP aspect of this scope(UGC Guidelines for Higher Education Institutions to Offer Apprenticeship/Internship Embedded Degree Programme, 2020).

Table 2

Statements distribution of under constructs

SL.NO	Constructs		No. of Items	
	TPS-TAP	**Total**	**Positive**	**Negative**
1.	Awareness	6	3	3
2.	Breadth	6	4	2
3.	Access and Equal Opportunities	7	4	3
4.	Learning Outcome	5	3	2
	TAS-TAP			
5	Quality Management	6	3	3
6	Truthfulness	8	5	3
7	Assessment	5	3	2
	Total	**43**	**25**	**18**

Pre-tryout Session

Experts Consultation (Validity), Pre testing and Items analysis of the Scale

The researcher effectively compiled a booklet of instructions and presented it to a panel of 12 specialists for evaluation. The feedback received was carefully analysed to ensure that the items' language, constructs, and overall acceptability were appropriate. A research scale was distributed via Google Forms to gather additional data responses was collected through email. 65 teachers used the scale for a pre-tryout session from Higher Secondary schools, colleges, and universities in West Bengal's 'Rarh Region' participated. 53.85 (35 teachers) per cent are from schools, 30.77 (20 teachers) per cent are from colleges, and included 15.38 (10 teachers) per cent are from universities. Males represent 59.86 per cent of the population, females represent 40.14 per cent, and from urban areas 53.94 per cent, and the rural regions 46.06 per cent of the people. The questionnaire also included a suggestion box to refine the items further, as some suggestions were utilised during the revision process. Some professional comments and ideas are included below.

Validity

The level to which a scale correctly depicts the idea of interest is referred to as its validity. The degree to which a tool measures what it is intended to measure is described as its validity(Sharma et al., 2022). In other words, only when a tool performs its designed functions is it deemed valid. For the scale, the investigators conducted Face Validity and Content Validity.

(a) ***Face Validity:*** Face validity deals with the appearance of the scale. A scale is said to have face validity when it "looks like" measuring what it is meant to measure by appearance. Before constructing the (TPAS-TAP), the investigators reviewed the literature. Also, while constructing the TPAS-TAP, suggestions provided by the experts were incorporated. Thus, the face validity of the TPAS-TAP was established by the investigator like...

"While Integration of A/I in a general degree programme- This sentence does not need to be repeated in statements. Try to make 25 statements here also which are more important to you. Others may be deleted for standardisation tools. So, it can be cut. At first, you write in. May Not, Maybe will not be suitable in statements. So, it would help if you put either positive or negative statements, e.g., SL—no 39, 40. I have modified it to green colour. Other sentences you also change like these – Expert No 4".

"Make use of user-friendly language while framing statements. Add some comments on the lacunas of the present education system. Please, ensure that all the statements are pretty much constructed equally important. Provide a realistic image. You can go through NPE 2020 policy. It will help you to construct more relevant statements. -Expert No 10".

(b) ***Content Validity:*** Content validity is a measure of the degree to which data collected using the TPAS-TAP represents the content of commitment being measured. It is referred to as logical or rational validity. The TPAS-TAP constructed by the investigators was also given to experts for their valuable suggestions for ensuring content coverage concerning the components of the scale (Sansanwal, 2020). The investigators considered and incorporated their feedback and suggestions for the final construction of the tool. Thus, the content validity of TPAS-TAP was established by the investigators.

"See the grammatical inconsistency; a confusing statement should be avoided. It would help if you saw the grammatical inconsistencies in all statements. Write all statements in the present tense. Do not use a double negative in a single sentence. Avoid words like should/must etc. Do not just negate the positive sentence for negative

aspects; instead, think of a negative part of the problem/topic.- Expert No 8".

"The tool is well designed. The items incorporated in the scale are closely related to each other. Expert No 12".

Following the expert's consultation and discussion, considering 6 of the 43 statements were eliminated. The remaining 37 items were reconstructed according to constructs for the TPS-TAP and TAS-TAP preparation collages.

Pre-testing and Items analysis

The accuracy and variability of test results are strongly influenced by item difficulty (Thorndike et al., 1991). Here researcher changed the phrasing of items and removed two items. The correlation between each item and the overall score was then determined, followed by the discrimination index (Sharma et al., 2022). According to Ebel and Frisbie (1986), a discrimination index of 0.40 and higher indicates good items; 0.30 to 0.39 indicate reasonably good items; marginal items from 0.20 to 0.29; and less the 0.20 display poor items. Here followed this parameter, and out of 43 items, 6 items range was below 0.30 (3,8,11,17,34,39), so deleted it is not measured directly to study variables. According to the results, the Kaiser- Meyer-Olkin (KMO) value was 0.819, higher than its cut-off value of 0.7, indicating that the samples utilised were enough to generate factors. The range has been offered by Kaiser as follows: ">0.9 is marvellous, > 0.8 meritorious, >0.7 middling, >0.6 mediocre, >0.5 miserable, < 0.5 unacceptable." The Rotated Component Matrix revealed 3 items with cross-loading (of which 4 were below the.30 range of DI). These 3 items were removed from the analysis list, and the remaining 34 items had a stronger KMO value of 0.9. The remaining 34 items are significant and high-quality indicators for determining how people feel about and approach the apprenticeship programme and ready big sample for pilot testing. In summary, the researcher skillfully reconstructed a scale of important professional suggestions and viewpoints, including insightful comments and ideas from professionals in the field.

Pilot study

Researchers divided the research tool into two sections. The first section required teachers to provide personal information, including their name, gender, location, institute name, and email address. In the second section, the questionnaire focused on the teachers' perceptions and attitudes towards the apprenticeship-embedded degree program. The research pilot involved the use of Google Form, which was distributed via email and WhatsApp numbers to school teachers, college teachers, and university professors in the Rarh region of West Bengal (Arun kumar, 2016). A total of 310 out of 450 teachers responded to the scale with clear instructions and guarantees provided, and the pilot study was completed over a two-month period. Upon collecting all data, positive and negative statement scores were assigned to facilitate item analysis.

Procedure for Items analysis

In order to analyze the items, the researchers utilized both the 'r' value and the split-half method (Sansanwal, 2020). Only items with an 'r-value greater than 0.5 ($r > 0.5$) were selected, while the rest were rejected. Additionally, Cronbach's alpha test was implemented to evaluate the items. Calderon Jurado & Morilla García (2018) utilized Alpha's Cronbach to demonstrate the internal reliability of the questionnaire. For TPS-TAP & TAS-TAP, 25 statements were chosen, and 9 statements were eliminated based on the results of the 'r' correlation study. Table 3 displays the researchers' findings.

Table 3

34 Item's total r-correlation

Items Number	'r' value	Result	Items Number	'r' value	Result
1	0.689	Selected	18	0.732	Selected
2	0.802	Selected	19	0.654	Selected
3	0.415	Rejected	20	0.567	Selected
4	0.267	Rejected	21	0.509	Selected
5	0.752	Selected	22	0.176	Rejected
6	0.743	Selected	23	0.388	Rejected
7	0.654	Selected	24	0.738	Selected
8	0.676	Selected	25	0.686	Selected
9	0.786	Selected	26	0.835	Selected
10	0.796	Selected	27	0.687	Selected
11	0.287	Rejected	28	0.786	Selected
12	0.666	Selected	29	0.312	Rejected
13	0.765	Selected	30	0.567	Selected
14	0.623	Selected	31	0.199	Rejected
15	0.256	Rejected	32	0.509	Selected
16	0.578	Selected	33	0.645	Selected
17	0.225	Rejected	34	0.805	Selected

Source: The researcher used "jamovi version 2.3.2, Software."

When it comes to tests or scales, it is crucial that they are reliable and consistently measure what they are intended to. The TPS-TAP & TAS-TAP have a high level of reliability due to the Likert technique used to create the Scale. However, Garrettee (1959) suggested that a longer test can result in a more accurate estimation of score reliability by reducing the likelihood of temporary and variable disruptions accumulating in one direction.

Reliability of Items

The split-half reliability divides the test of a single knowledge domain into two parts and presents both parts to a group of students simultaneously. Scores on both parts of the test are correlated. Reliable tests are highly correlated and indicate that they perform equally (or poorly) on both halves of the test.

Table 4

Valid and Excluded Items

		No of items	Percentage (%)
Cases	Valid	25	73.52
	Excluded	9	26.47
	Total	34	100.0
(a) List wise deletion based on all variables in the procedure.			

The split-half test is a reliable method for evaluating the internal consistency of a test. It effectively measures the individual contribution of each test component towards the overall measurement of the object being tested. As per Table 4, only 9 out of 34 items were excluded, leaving 25 items that were divided into two parts. Results from Table 5 showed that both Part 1 and Part 2 had Cronbach Alpha values of 0.864 and 0.850, respectively. Furthermore, the combined tool (TPAS-TAP) yielded a Cronbach's Alpha of 0.856, an acceptable value per Table 7.

Table 5

Split half reliability for Part 1 & Part 2

Cronbach's Alpha	Part 1	Value	.864
		N of Items	14a
	Part 2	Value	.850
		N of Items	11b
		Total No. of Items	25
Correlation Between Forms			.754
Spearman-Brown Coefficient	Equal Length	.854	
	Unequal Length	.854	
Guttman Split-Half Coefficient		.840	
(a) The items are TA1, TA2, TA3, TB4, TB5, TB6, TAEO7, TAEO8, TAEO9, TAEO10, TAEO11, TAEO12, TLO13, and TLO14. (b) The items are, TQM15, TQM16, TQM17, TQM18, TT19, TT20, TT21, TAs22, TAs23, TAs24, and TAs25.			

Source: Data computed through IBM SPSS 28.

Reliability testing is a critical task for item analysis by measuring the internal consistency and properties of the scale (Hair et al., 2006). Cronbach's alpha establishes the scale's reliability, which is "a commonly applied measure in the Likert scale survey questions". The researchers tested Cronbach's alpha using "SPSS". It is shown in Table 5 and 6.

Table 6

Cronbach's Alpha value for TPS-TAP & TAS-TAP

Variable Scale	Cronbach's Alpha	No of Items
TPS-TAP	0.864	14
TAS-TAP	0.850	11

Source: Data computed through IBM SPSS 28

According to Taber's research in 2018, values of Cronbach's alpha between 0.70 and 0.90 are considered acceptable. To assess the internal consistency of the items, a judgment analysis is conducted using Cronbach's alpha chart. A score of 0.5 is deemed unacceptable, while scores between 0.5 and 0.6 are considered poor. A score of 0.6 to 0.7 is questionable, while scores between 0.7 and 0.9 are acceptable and excellent. Based on this assessment, the TPS-TAP and TAS-TAP tools combined (shown in Table 6) fall into the 0.8-0.9 group, making them appropriate tools for the task at hand.

Table 7

Cumulative Cronbach's Alpha value for Scale (TPAS-TAP)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
TPAS-TAP	0.856	25

Source: Data computed through IBM SPSS 28.

A single test administration is necessary for Cronbach's Alpha test reliability technique to accurately evaluate a particular test's reliability. The scale's elements have higher internal consistency the closer the value is to 0.9. TPAS-TAP Table 7's "0.856" Cronbach's Alpha score, which is near 0.9, shows that the TPAS-TAP has a high level of internal consistency. Therefore, it may be said that the TPAS-TAP is trustworthy. Table 8 displays each item's mean, SD, item-rest correlation, and Cronbach's Alpha, though "jmovi version 2.3.2 (SPSS)".

Table 8

Item Reliability Statistics Final draft for tool

Item code	Mean	SD	Item-rest correlation	Cronbach's α
TA1	3.88	1.45	0.678	0.802
TA2	3.96	1.33	0.567	0.767
TA3	3.78	1.23	0.567	0.745
TB4	3.65	1.32	0.756	0.868
TB5	3.45	1.52	0.876	0.869
TB6	3.63	1.45	0.786	0.857
TAEO7	3.96	1.25	0.775	0.765
TAEO8	3.63	1.16	0.745	0.745
TAEO9	3.69	1.27	0.867	0.968
TAEO10	3.88	1.35	0.778	0.867
TAEO11	3.56	1.34	0.578	0.869
TAEO12	3.65	1.27	0.756	0.776
TLO13	3.45	1.34	0.794	0.956
TLO14	3.67	1.34	0.745	0.914
TQM15	3.67	1.18	0.796	0.956
TQM16	3.96	1.34	0.786	0.907
TQM17	3.78	1.26	0.876	0.867
TQM18	3.73	1.22	0.656	0.669
TT19	3.56	1.21	0.767	0.767
TT20	3.63	1.12	0.745	0.857
TT21	3.45	1.21	0.648	0.978
TAs22	3.23	1.13	0.734	0.877
TAs23	3.45	1.23	0.745	0.867
TAs24	3.96	1.31	0.787	0.876
TAs25	3.55	1.22	0.756	0.818

The researcher prepared the final draft Self-constructed Research Tool, and there was distributed dimension after the process of the 'r' value. The theme has presented the Table 9.

Table 9

Distribution of Items under each dimension after item analysis

SL.NO	Constructs	No of Statements		
	(TPAS-TAP)	*Total*	*Positive*	*Negative*
1	Awareness (Code-A)	3	2	1
2	Breadth (Code-B)	3	2	1
3	Access and Equal Opportunities (Code-AEO)	6	4	2
4	Learning Outcome (Code-LO)	2	1	1
5	Quality Management (Code-QM)	4	3	1
6	Truthfulness (Code-T)	3	2	1
7	Assessment (Code-As)	4	2	2
	Total	**25**	**16**	**9**

Validity and Reliability Analysis for TPAS-TAP

As per the validity and reliability analysis (Table 10), each latent construct's Composite Reliability (CR) is more than the acceptable limit of 0.70.

Table10

Validity and Reliability Analysis

Construct	Composite Reliability (CR)	Average Variance Extracted (AVE)
A	0.811	0.567
B	0.845	0.651
AEO	0.724	0.533
LO	0.756	0.623
QM	0.702	0.589
T	0.819	0.745
As	0.745	0.651

Source: Data computed through IBM SPSS 28

The scale items reveal a strong internal consistency (Sekaran, 2016). On the other hand, the Average Variance Extracted (AVE) of each latent construct exceeds the threshold limit of 0.5. It affirms that the above-discussed CFA measurement model has strong convergent validity.

Exploratory Factor Analysis

Principal component analysis and varimax rotation were utilized in IBM SPSS 28 to conduct an exploratory factor analysis and determine the dimensions of teachers' perception and attitude scale. Factor analysis is a highly recommended technique in instrument development, having been used extensively to verify the dimension structure of numerous scale development research (Turker, 2009; Martnez et al., 2013; Fatma et al., 2014; El Akremi et al., 2015). To establish appropriate levels of explanation, the minimum factor loading requirement was set at 0.50 (Leech et al., 2005), and the degree of variance in each variable was evaluated through the commonality of the variables. The findings revealed that all commonalities were more than 0.60, indicating a high level of confidence in the results.

Table 11

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.834**
Bartlett's Test of Sphericity	**Approx. Chi-Square**	**3656.737**
	df	**308**
	Sig.	**.000**

Source: Data computed through IBM SPSS. 28

The result of factor analysis showed that Kaiser-Mayer-Olkin MSA was 0.834. The results showed a seven-factor solution with 69.024 variances explained by the items. The overall significance of the correlation matrix was tested using Bartlett's test (Table 11). The results showed that, collectively the correlations were significant. Results of Exploratory factor analysis regarding the Rotated TPAS-TAP Matrixa, statements, and loadings are summarised in Table 12.

Table 12

Rotated TPAS-TAP Matrixa

			Component		
	1	2	3	4	5
Awareness of policy is essential for the implementation of AEPD.	.615				
Teachers are aware of the NEP-2020 significant objectives of the policy.		.756			
Teachers are not aware of previous apprenticeship policies in India.		.705			
It helps to develop self-discipline among learners.			.745		
It develops the capacity and the production job of society.	.786				
It does not develop the overall motive of a learner.	.784				

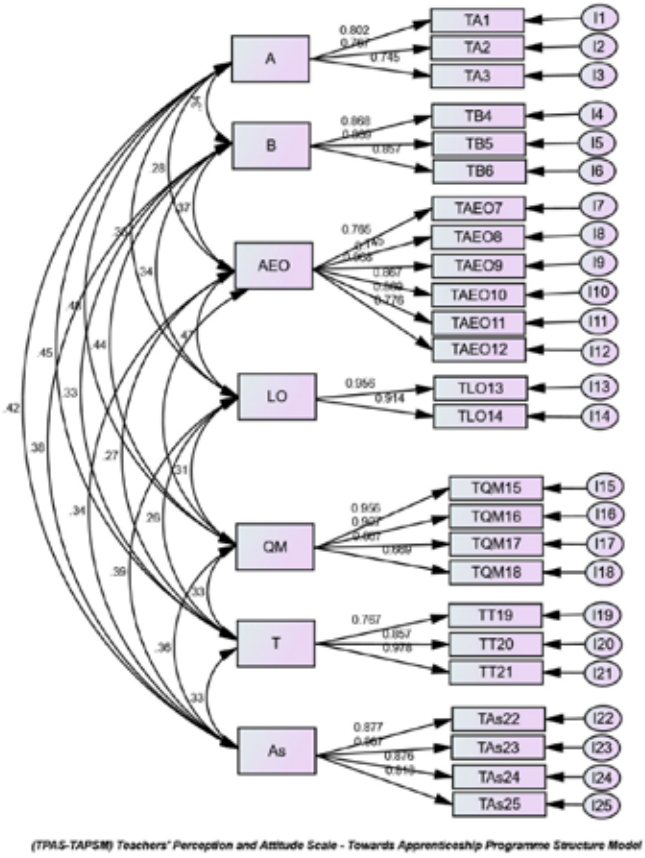
The location of Higher education institutions will depend on the implementation of AEDP.		.589			
An online Learning method that helps to meet its strategic goals towards AEDP.			.914		
It helps to select accessible career counselling.		.817			
A/I training enhances more soft skills for future learners.	.673				
It has not coordinated the entire infrastructure correctly during training.	.817				
It creates a hostile learning environment for all learners.		.665			
The institute has a tie-up with the companies for placements of the students.	.740				
Apprenticeship training may not produce outcome-based learners for socially accepted.				.766	
6-month A/I training fulfills the guideline of HEI/ UGC.		.694			
AEDP will provide A/I training in the last semester (6 semesters), its best strategy.			.890		
Motivate future learning to be career-oriented.		.683			
HEI does not require following all protocols given by UGC.	.774				
During the A/I degree program training, I need supervision for intern performance.					.650
Provide equal weightage for placement of every steam of learners.	.692				
It does not provide the same opportunities as other A/I technical degree courses.				.612	
AEDP will positively affect new graduate learners.		.735			
It helps to develop self-discipline among learners.			.790		
No need to upgrade the syllabus from time to time.	.747				
Does not provide Special infrastructure for exceptional learners.		.765			
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 13 iterations.					

Confirmatory Factor Analysis (CFA) for TPAS-TAP

Figure 3 indicates the " Teacher Perception and Attitude Scale- Toward Apprenticeship Programme Structure Model (TPAS-TAPSM) to aid in the understanding of verification parameters and the linkages between the selected items (Khan et al., 2021). The final 25-item responses were run for the CFA. The Rotated Component Matrix was copied to the IBM SPSS AMOS version 28 (Khan et al., 2021).

Figure 3

Teacher Perception and Attitude Scale- Toward Apprenticeship Programme Structure Model (TPAS-TAPSM)



Source: Created by the researcher using AMOS software

In the present study, the confirmatory Factor analysis determines whether seven components can be extracted from 25items: Awareness, Breadth, Access and Equal Opportunities, Learning Outcome, Quality Management, Truthfulness, and Assessment. The researchers developed the "TPAS-TAPSM" to help understand verification variables and the relationships between the chosen items. The aim was to understand better the relationship between dimension-wise items and the internal consistency of dimension-wise things shown in Figure 3, indicating that for this study, the teacher's perception and attitude have been shown by selecting different constructs for this tool and showing the consistency. Under Awareness (A) -TA1, TA2, TA3; Breadth (Code-B)- TB4, TB5, TB6; Access and Equal Opportunities (Code-AEO)-TAEO7, TAEO8, TAEO9, TAEO10, TAEO11, TAEO12; Learning Outcome (Code-LO)-TLO13, TLO14; Quality Management (Code-QM)-TQM15, TQM16, TQM17, TQM18; Truthfulness (T) -TT19, TT20, TT21; Assessment (Code-As)-TAs22, TAs23, TAs24, TAs25. The small circles with arrows indicated the serial number of this scale (I1 to I25). Medium rectangle too small rectangle arrow shows Cronbach's α of each item. So, the test indicates that this tool is fit for the study. Results of confirmatory factor analysis in terms of the factor name and loadings are summarized in Table 13.

Table 13

Factor Loadings

Factors	Indicator	Estimate	SE	Z	Cronbach's α	P
Awareness (A)	TA1	0.554	0.134	3.15	0.802	<.001
	TA2	1.163	0.123	3.11	0.767	<.001
	TA3	0.421	0.156	2.55	0.745	.009
Breadth (B)	TB4	0.956	0.167	8.90	0.868	<.001
	TB5	1.139	0.134	6.48	0.869	<.001
	TB6	0.956	0.156	4.33	0.857	<.001
Access and Equal Opportunities (AEO)	TAEO7	0.575	0.176	3.67	0.765	.002
	TAEO8	0.456	0.187	9.72	0.745	<.001
	TAEO9	1.1345	0.123	3.67	0.968	<.001
	TAEO10	0.967	0.134	3.65	0.867	<.001
	TAEO11	0.555	0.157	4.12	0.869	<.001
	TAEO12	1.167	0.164	2.56	0.776	<.011
Learning Outcome (LO)	TLO13	0.945	0.240	3.45	0.956	<.001
	TLO14	0.276	0.175	1.83	0.914	0.089
Quality Management (QM)	TQM15	0.556	0.167	3.67	0.956	<.001
	TQM6	1.145	0.120	9.52	0.907	<.001
	TQM17	0.674	0.145	3.57	0.867	<.001
	TQM18	1.135	0.145	2.88	0.669	<.001
Truthfulness (T)	TT19	0.433	0.134	2.35	0.767	0.019
	TT20	0.879	0.145	6.52	0.857	<.001
	TT21	0.554	0.156	4.32	0.978	<.001
Assessment (As)	TAs22	1.164	0.134	2.55	0.877	0.002
	TAs23	1.176	0.134	3.34	0.867	<.001
	TAs24	0.567	0.123	2.56	0.876	0.005
	TAs25	0.876	0.145	3.68	0.818	<.001

Source: Data computed through IBM SPSS. 28

The analytical summary for the model mentioned above, as produced by AMOS 28, is shown in Tables 13 and 14. The data are appropriate for the model fit, as shown by Table 14's Chi-square p-value of 0.132 (greater than 5%) and CMIN/DF value of 2.981 (less than 3). The model also produced additional goodness indices, including GFI = 0.923, AGFI = 0.803, CFI = 0.945, and NFI = 0.928, all of which are over their respective threshold limits and show that the model is well-fitted, and two indices of badness, including RMSEA = 0.040 (less than 0.10) and SRMR = 0.042 (less than 0.09), show that the data fits the model well because a lower RMSEA and as a result, it demonstrates the suitability of the mentioned CFA measurement approach.

Table 14

Summary of CFA Model Fit

Name of Category	Model Fit Indices	Threshold Limits	Value Attained
Absolute fit Indices	X2	p-value > 0.05	0.132
	RMSEA	>0.10 bad fit; 0.05-0.10 mediocre fit; and if <0.05 good fit	0.040
	SRMR	<0.09	0.042
	GFI	<0.90	0.923
Incremental Fit Indices	AGFI	>0.80	0.803
	CFI	>0.80 sometimes permissible; >0.90 traditional; and if >0.95 great	0.945
	TLI	>0.90	0.901
	NFI	>0.90	0.928
Parsimonious Fit	CMIN/ DF	<3 good; and if <5 sometimes permissible	2.981

Source: Data computed through IBM SPSS AMOS 28

Given that their p-values are less than 5%, Table 10 shows that all manifest variables connected to the corresponding latent construct shown in Figure 3 are statistically significant. Furthermore, it goes on to say that because each measured variable, manifest variable, or observed variable has a strong correlation with its corresponding theoretical construct and has a standardised regression weight of at least 0.40, the convergence validity of the CFA measurement model is also attained (Abbott, 2003).

Norms

The researchers confidently provided clear guidelines to the entire group and effectively utilized the "TPAS-TAP" tool, which provides scores ranging from 25 to 125. Scores between 40 and 60 percent indicate a neutral stance towards ADEP, while scores above 60 percent reflect a positive attitude and perception towards AEDP. Conversely, scores below 40 percent suggest negative attitudes and perceptions towards ADEP, and based on these criteria, the samples were confidently divided into one (teacher) distinct group.

Conclusion and Implications

This paper analysed the validation of the scale development procedure. Teachers' Perception and Attitude Scale-towards Apprenticeship Programme (TPAS-TAP) presents a rigorous process successively has been filled to develop and test perceptions and attitudes towards AEDP. The model is validated with statistical tools. Each latent construct is well described before creating the measurement model for the constructs. The result indicates that the internal consistency is good; overall, Cronbach's alpha reliability was 0.856. The confirmatory factor analysis employed the structural equation model and goodness of fit index (CMIN/DF= 2.981) to analyse and study the relationship between components. The RMSEA was 0.040; IBM SPSS (28) AMOS software was used to analyse the scale,suggesting a good measurement model and path analysis informs that the scale showed good evidence of both convergent and factorial validity; path coefficients provide the degree of impact on the dependent constructs. These guidelines will also be helpful to other researchers who wish to perform research. It teaches

how to make tools and their importance in future studies. Academicians, professors, research supervisors, policymakers, etc., can use this instrument better to understand instructors' attitudes and perspectives on research. This tool will assist teachers/ stakeholders in identifying the gaps in the present AEDP programme on the quality of training, awareness, breadth, assessment, learning outcomes, quality management, truthfulness, and assessment perspective in the Indian context. The present databased paper offers implications for academicians. For instance, the data indicates that administrators' perception of awareness, access, equal opportunities, learning outcomes, and breadth can, directly and indirectly, influence the effectiveness of the apprenticeship degree programme. On the other hand, the attitude of quality management, truthfulness, and assessment positively affect AEDP in the Indian context. Through this scale development process, researchers can understand the relationship between awareness and learning outcome, quality management and assessment, learning outcome, the truthfulness of AEDP and the significant relation on quality management. Here, different dimension items measure the effectiveness of implementing AEDP. This study can help researchers, academics, and policymakers understand how the perspective and attitude of administrators as a stakeholder can be influenced and what different dimensions/ Constructs can be used to know how to oversee the new apprenticeship-embedded degree programme introduced by UGC.

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Infusing Environmental Studies in the Undergraduate Curriculum of a Home Science Program: A Pedagogical Intervention

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Abstract

Environmental Studies (ES) is an important theme that features all through school education and also finds a place at the undergraduate level. However, the implementation of the ES curriculum at the undergraduate level is largely done in a theoretical and pedantic manner. Moreover, the theme may also lack relevance for students who are pursuing degrees that may not seemingly or directly be related to the environment. In order to address these issues, an intervention was designed collaboratively between the institutional stakeholders; and implemented in a college of home science. This article reports the various aspects of the intervention undertaken as well as the insights gained from students' feedback. Recommendations to enhance the intervention are presented at the end.
***Keywords**: Environment Studies, Pedagogy, Undergraduate curriculum, Project-based Learning, Environment Education*

Introduction

The importance of having environment education (EE) in mainstream education gained importance after the Tbilisi Declaration (1977). It was during this time, broad goals and principles of EE were laid out and there was an emphasis to direct the young minds towards achieving a better understanding of the natural world around them. EE was based on the *"assertion that both the natural and human built environments, locally and globally, are interdependent and include interactions between biological, economic, social, and cultural forces"* (pg 3; UNESCO 1980 cited in Locke, Russo & Montoya, 2013). It therefore also follows that in addition to encouraging values and sensitivity towards the environment, there needs to also be emphasis on life skills of problem solving, empathizing, cooperation, collaboration and gaining holistic perspectives. After the 1992 Earth Summit in Rio de Janeiro, initiatives and policies around EE (also known as Education for Sustainable Development) picked up pace throughout the world.

India has historically been a propagator of social and cultural values which are intertwined with that of preservation of the environment around us (Almeida & Mackenzie, 2011). In the pre-independence era, there were efforts to "environmentalise" the teaching – learning process in schools. For example, Mahatma Gandhi's Basic Education Movement (*Nai Taleem*) which stressed on the need to contextualise school

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education to local environmental needs. Subsequent to the 1992 Earth Summit (UNDCC, n.d), the national policies of education also emphasized environmental education at various levels. Environmental studies (ES) started to feature across the various (central and state) education boards in India, either as an independent subject or as an infused subject at the school level (NCF 2005; Sonowal, 2009).

Anxious that the study of the environment was not receiving adequate attention in academic programs across the country, the Supreme Court of India directed the University Grants Commission (UGC) to introduce a basic course on Environmental Studies in all undergraduate branches that comes under the purview of the UGC. Accordingly, a six-month compulsory core module course in Environmental Studies was prepared by an expert committee and implemented in colleges across the country (UGC, n.d).

The current study was conducted in one such undergraduate college Dr BMN College of Home Science, Mumbai. The college is autonomous under the SNDT Women's University and caters to female students mainly between the age group of 18 to 23 years. After completing 2 semesters of introductory and foundation courses, the specializations offered under the Home Science Faculty are Food Science and Nutrition, Nutrition and Dietetics, Human Development, Textile Science and Apparel Design and Resource Management. The institution is multi-faculty and also offers an undergraduate program in Computer Applications (BCA). A course in Environmental Studies (ES) is mandatory in the first year of both programs. It must be noted that students in the Home Science program chose their specializations only in the 4th semester. They are however offered introductory and foundation courses in semesters 1-3 which prepares them for the curriculum that follows as part of their specializations.

The ES faculty and then in-charge of the Environment Sensitization Committee (second author) for the academic year 2021-22 at this juncture raised the concern that while the mandatory subject of ES did introduce environmental topics to students, it did so at a pedantic and theoretical manner. There was a need for intervention strategies which would engage students at a much deeper level, and which would enable them to link their major subjects in the subsequent years with the pressing environmental concerns, thereby making it more contextual and relevant for students. Additionally, it was felt that there is an overlap and repetition of content taught at school level which impacted the general interest level of students. Events related to the environment organised by the Department, as well as the college's Environment Sensitization Committee were one-off events which included lectures, workshops or talks with experts from the domain. While these events piqued students' curiosity in the subject, it did not necessarily lead to sustained interest. These initial concerns raised by the faculty member along with all the other factors mentioned above seeded the initial motivation to pursue an approach involving a more sustained intervention (McNiff, 2013; Altrichter, Posch, & Somekh, 2007).

Since there was consensus to have more sustained efforts to inculcate an ethos towards environmental consciousness wherein students would imbibe and practice environment friendly actions on campus and their neighbourhoods, a slightly longer intervention was initially strategised. The driving factors that underlined the intervention were; brainstorming the ways in which environmental studies could be contextualized for UG students of the two programs offered by the institution and developing project ideas that touch upon students' major subject as well as the environment.

To address this, the college reached out to the Homi Bhabha Centre for Science Education (HBCSE) in Mumbai, a National Centre of the Tata Institute of Fundamental Research (TIFR), whose broad goals are to promote equity and excellence in science and mathematics education, from school to undergraduate college level as well as to promote scientific literacy in the country. The academic collaboration was focussed on designing innovative approaches which would enhance the receptiveness of students, as well as the motivation of teachers involved in imparting the ES curriculum, in a manner which is related to real and field learning. The focus was also to bridge the gap between the intended objectives of the ES syllabus and the actual practicalities of implementing the same.

Theoretical framework, study context and methodology

The current study aligns itself with the social design-based research (DBR) framework which brings together DBR alongside collaboration between the institutional stakeholders so as to work towards co-constructing the intervention (Gutierrez, Jurow & Vakil, 2020; Design Based Research Collective, 2003). Over a period of one semester, there were multiple interactions between both stakeholders which led to the intervention. Additionally, it was important to review the entire syllabi of the respective domains within the Home Science curriculum. Having done that, a first set of possible project ideas were proposed to the teachers. Teachers who interacted closely with students and who had years of experience gave their feedback on these ideas which were then reworked on. Several project ideas were also proposed by the concerned faculty members themselves. At each stage, teachers too interacted with their students in order to get feedback on the project ideas in terms of difficulty, feasibility and timelines.

Typically, the college assigns projects to first year students as a way to initiate students into research. Students would undertake independent proto research projects and submit a project report at the end of the semester. The intervention was therefore planned using these project modules for which they are evaluated. Instead of being completely open ended and from various domains, the project ideas were generated in collaboration with faculty from the specializations which could be offered to students in the 4th semester onwards therefore initiating the possibility of an interdisciplinary approach between environmental related projects and the focus areas of the respective specializations. For example, a project on "eco-dyes" touched upon how one can extract natural eco-friendly colours for textile dyeing. Similarly, other project ideas were shared with students, which is listed in table 1. Expectations from students were that they had to present a project report at the end which included rationale and literature review to the topic chosen, make a prototype (if relevant), present a preliminary analysis of the data collected (if any), describe the process and outcome of their product, discuss implications, include photographs or videos (as evidence) if possible. The project ideas were shared with first year students (around 105 FY BSc and 29 FY ND and 130 FY BCA students) and students were encouraged to work in groups.

Observations and preliminary analysis

This section discusses the various projects undertaken by students and their reflections as reported in their project reports. A preliminary analysis on 61 project reports was undertaken which were submitted by either individual students or groups, with overlap of student participation. It is important to note that this intervention was carried out during the COVID-19 pandemic when colleges were largely working online and physical interactions between faculty and students were almost nil. Teachers also reported that student participation in classes and other activities had dropped heavily over the semester for several reasons, amounting from access to technology to screen overtime. This also explains why only a small section of students (despite the large class size) actually completed their projects even though it carried credits and they were evaluated for it. The projects discussed below are categorized on the basis of the specialisation subjects that the B.Sc students can opt for in the second year of the program.

Human Development

Twelve students chose to do Project 1 (Refer Table 1). Their studies involved interviewing young children and their experiences during the pandemic. Children's responses varied from missing their grandparents, playing

Subject	Project Title	Description of Project	Knowledge/ Skills addressed
Human Development (Project 1)	Case study: Understanding effects of lack of outdoor activities on emotions of a child during the pandemic.	In this project, students are expected to conduct an in-depth interview of one school going child and understand what emotional trajectory he/she has gone through over the last 2 years, in the context of - not being able to play outside - visit playgrounds - travel to places/ going to native place - access to nature	Core subject related: Research methodology, Child psychology/ Socioemotional development, Interviewing skills, Ethics of research Environment related: Physical and mental wellbeing due to nature and being outdoors Other skills: To do this study, consent form from a parent is compulsory. Child's identity should not be revealed. Use a pseudonym in the project report.
Human Development (Project 2)	Design a simple game on the theme of environment/ environment protection/ wildlife.	In this project, students are expected to design an original game which can be played by a single child or in a group. The time taken to play the game can range from 5 to 30 minutes.	Core subject related: Strategies for Early Years (ages 3-6) & Foundational Years (ages 6-8), Play: Meaning, Importance, developmental domain(s) enhanced & competencies developed through play, types and stages of play, materials & techniques, etc., creative art and craft, foundational literacy, child psychology etc. Environment related: Building awareness around a specific environmental topic Other skills: Design thinking, ideation
Resource Management (Project 1)	Estimating Green Cover in your area.	In this project, students are expected to locate their residences on Google Map and learn how to calculate area from google maps. They need to mark a square area around their home (roughly 5,00,00 sq.m) and analyze how much green cover (tree cover only) is there in that area using the satellite imagery (mode) of google maps. The project also involves calculating the area of this green cover and finally representing the green cover as a percentage of total area studied.	Core subject related: Map reading skills and local geography, reading satellite imagery Environment related: Awareness on how much greenery is there in your area Other skills: There are also other scientific and mathematical skills associated with this activity. For eg, estimation skills, basic mathematics, observation, analysis, use of digital tools.
Resource Management (Project 2)	Conceptualize an Eco Resort in a place of your choice (in India) with the USP being that is sustainable and environment friendly. Also, design a pamphlet for this new	In this project, students have to ensure that all the factors involved in the Eco Resort they conceptualize are sustainable and environment friendly. Points to keep in mind: Location of the Resort, Food served there, Staff who works there, Facilities in the resort, Cuisine, menus, Waste Management, Landscaping, Recreational options available for guests, Transportation, Inventory for the resort, choice of service equipment, design and décor,	Core subject related: Travel management, food and beverage services, professional communication skills for hospitality industry Environment related: Understanding of ecotourism and sustainable tourism Other skills: There are also other 21st century skills associated with this activity like communication skills, product design, graphic designs, reporting and documentation

	Eco Resort.	space, lighting and ventilation, furniture, Water sources, Energy (electricity) source, etc. Students can use any format/ software to design the pamphlet.	
Textile and Apparel Design (Project 1)	Eco dyeing , Eco printing on textiles/ Exploring potential natural dyes.	In this project, students are expected to work with any natural material and extract the dye from it. They are then required to use it on fabrics and check their efficacy.	Core subject related: Skills directly associated with textile and apparel design like dye extraction and experimenting on fabrics. Environment related: Being aware of the eco-friendly alternatives in their area.
Textile Science and Apparel Design (Project 2)	Best out of waste - from leftover fabrics (old clothes etc.)	In this project, students have to create innovative products from waste fabrics.	Core subject related: Skills directly associated with textile and apparel design textile product designing. Environment related: Being aware of the eco-friendly alternatives in their area.
Food Science and Nutrition (Project 1)	Microgreens	Microgreens are essentially young plants which are consumed for their nutritional value. In this project, students have to grow a microgreen plant of their own and document the process.	Core subject related: Awareness around healthy eating, nutritional values of microgreens, sustainability issues surrounding microgreens, Hands-on experience of growing microgreens, Reporting and documentation skills Environment related: Alternative sustainable options for crop growing
Food Science and Nutrition (Project 2)	Develop or compile innovative recipes from ingredients which one might typically classify as 'food waste' (like vegetable or fruit peels etc.)	In this project, students are expected to experiment and practically try out some innovative recipes usingingredients which one might typically classify as 'food waste'. Students are also expected to think about nutritional value, energy, calories etc., while developing the recipes; and also document the process.	Core subject related: Innovating healthy and environment friendly recipes. Environment related: Awareness around food waste, and waste management, issues related to farm to plate, sustainable agriculture, organic food waste
Computer Application (Project 1)	Accounting / Managing Finances for an Eco-friendly lifestyle.	In this project, students have to predict their financial outflow if they change to buying only eco-friendly products. For this, they need to list out the monthly supply of items they buy, its quantity and rates. Replace that item with an eco-friendly product they find in the market and then calculate the expenditure for the entire month. Lastly, analyze how much money will they save/spend by purchasing eco-friendly products.	Core subject related: Financial Literacy, Accounting and Personal Finance Management, using excel Environment related: Awareness of eco-friendly products in the market and about alternate lifestyle options

Table 1: Project ideas bringing together home science curriculum and environmental science developed for FY students

Images of the prototyping and play-testing (Source: Report HDGP11)

games, friends, schools, going to native place, their visits to the zoo, beaches and gardens. One group of students decided to take up Project 2. According to them, *"For this project we have created a game named Nature Trivia, which tells us about different environmental issues and their best possible solutions in a fun and interesting way. Board games play an important role in human development in order to improve mental health. This game is also a board game based on the theme of environment protection. This game will help to spread awareness about the importance of the environment among youth and help to motivate them to take small steps towards improving and solving the problems for a better environment."* (Report HDGP11)

The group developed a board game consisting of dice and pieces. The board has 32 squares and each one has environmental issues written on them. The players are posed with one issue at each square for which they are proposed 3 possible solutions in which one is correct and two are incorrect. Answering the correct solution leads to ownership of the said square and the winner is determined by who owns the maximum squares. The group claimed that they ideated several times before arriving at the game and even prototyped it with children and got their feedback.

Resource Management

Students probably found conceptualizing a hypothetical eco-resort a little difficult and therefore the facilitator adapted the project and made it an exercise to collect data on existing eco-resorts. 11 students chose to do the adapted version of Project 2. One group chose to do Project 2 as described (Report RMGP7). The students who chose the adapted version of Project 2 got in touch with eco-resorts telephonically and inquired about their various practices or in other cases, students just collated the information from their websites. After this, they compared the 3 eco resorts with each other and against a set of criteria that was described as pointers in the project brief. Some groups marked 'presence or absence' for certain criteria. For example, did the resort serve sustainable and local food? This was then marked as Yes/ No or marked with a dot or tick (Report RMSP5; Report RMSP9). In other cases, students developed a gradation where they marked a resort with a gradation-like score, using terms like 'needs improvement', 'can be better' and 'excellent' (Report RMSP6).

In fact, some students also reflected on their project and talked about how it brought about a change in their view. To quote an example, one student mentioned, *"My own view on the resorts changed while researching them. I like luxury and relaxation while traveling. After this report, I discovered how all luxuries and relaxation can also be achieved through these eco resorts. It made me want to travel to one of these myself and experience it first-hand. It was honestly an enlightening experience. It also educated me on how much carbon footprint is created by a single traveler on the environment every single time. We can make a lot of changes by just being a little environmentally conscious and being an eco-tourist."* (Report RMSP2)

One group who worked on creating a pamphlet called their eco-resort BMNITE ECO RESORT (after their college name). In the pamphlet, they covered some details related to facilities available in the resort with emphasis on how they are "eco" or environmentally sound. Other sections also mention recreational activities offered by the resort, and community service done to help the local population, and what kind of food they serve (Report RMGP7).

Textile and Apparel Design

Thirteen students took up Project 1 that involved making natural dyes from various organic sources. One student compiled information on natural dyes. Six students worked on upcycling textiles (Project 2). In the former cases, students tried dyeing the fabric with flower petals, leaves, fresh and used tea leaves, beetroot, turmeric, spinach, purple cabbage, rose and marigold petals, and even coconut husk. Some students also tried to dye fabrics using items like stones or seeds so as to obtain patterns on it (Report TADSP1). Some groups did a pre-wash and post-wash analysis to see if the natural dyes persisted or lost color (Report TADGP4). Overall, the majority of the students/ groups engaged in some hands-on practice with making natural dyes and using it to dye fabrics.

The students that worked on upcycling textiles attempted to actually make mat/rug apron, scrunchie, head band, money bag, masks, cloth pads, out of unused cloth strips, torn pieces of scarves, old mat and woolen threads. (Report TDAGP15/16/17/18/20). Interestingly, one student used a personal experience as a motivation to develop a cloth sanitary pad using old cloth as a means to address her medical infection/allergies. According to her, *"the cloths which were used and thrown by me during this time can be saved and also the old cloths which was ready to go to landfills are used in this process."* (Report TDAGP17)

Food Science and Nutrition

In this subject, environmental linkages were far more direct as issues related to farm to plate, sustainable agriculture, organic food waste and composting are well documented

and publicized. Three students worked on trying or developing recipes from what one might typically classify as 'food waste' like vegetable peels, etc. (Project 2). One student borrowed a traditional Andhra recipe for a chutney that used leftover ridge gourd peels, while the other made kebabs of the same. Another student made chips from Apple peels (Report FSNSP12). 12 students worked on microgreens (Project 1) and undertook short tasks like sprouting fenugreek seeds, moong seeds, mustard seeds, etc. Some then

used these in their recipes to make it tastier and more creative.

Student feedback

The core of any design-based intervention is its iterative nature which is a resultant of a reflective inquiry process (Christensen & West, 2018). In an attempt to strengthen the intervention in the upcoming academic cycles, a feedback form was circulated amongst the first-year students who engaged in the project work. Filling the feedback form was voluntary and we received 119 valid responses, which consisted of both BCA and BSc students. Initial analysis of the feedback responses indicated that nearly 76 per cent engaged in group work as opposed to working alone exclusively (24%), and just around 18 per cent of students felt the project work was easy or very easy. However, on asking what they considered difficult or easy, students' responses were divided. Students reported difficulty in collecting data (23%), writing the report (21%), doing the experiments (17%), finding information from the internet (15%) and interpreting their findings (18%). However, a similar percentage of students also considered collecting data (33%), writing the report (13%), doing the experiments (9%) and finding information from the internet (35%) as easy. When asked if they learnt something new from this project work, students reported the following (refer to the box).

Even though majority of the students (87%) claimed that they felt that global warming/climate change/environment pollution is related to their respective curriculum, very few articulated that connection. We did however find instances of students being able to break down larger sustainability issues to local problems. For example, one student mentioned, *"As my topic was upcycling food waste, we can learn how one can use more food ingredients or vegetables without wasting or minimizing wastage. And I think it can even go with the sustainable development goal of zero hunger and good health and wellbeing"* [G4]. Similarly, another student mentioned that *"There is a lot of food waste, textile industry causes a lot of pollution and fast fashion is bad for the environment, hospitality industry also causes pollution so yes every field is in some way connected to global warming or climate change"* [G33].

Around 43 per cent of the students reported having liked the fact that they learnt something new (knowledge and/or skills) in their field or regarding the environment. They also reported (11%) liking the topic and the idea of doing their project work in this area. Similar number of students reported liking (9%) and disliking group work (11%). On the contrary, students reported disliking parts of the data collection process (12%) and working online (8%). When asked how the project experience could be made better for them, around 35 per cent of students suggested that they could have more in-depth sessions, more guidance or mentoring sessions, exposure with experts, and more practical experience included. Around 56 per cent students reported that there was nothing that they disliked about this project work.

"I gained a little experience of how to speak with people and interview them." [G8]
"Yes, I learnt that in our day to day life we often use products that are very harmful for the environment but there are many other alternatives that we should use instead" [G25]
"Yes, I have learned to use the parts of vegetables we usually throw away and we can make tasty recipes out of them also." [G31]
"The project work helped me in improving my communication skills." [G44]
"It made me realize how the environment plays an important role in every sector and how much we take it for granted." [G51]
"Yes, a group project is not an easy task and sometimes you won't get along with members but still you need to do your best to the project success while maintaining unity as a group." [G62]
"Yes I have learnt to be more confident." [G64]

Discussion and Future Work

Environment is a topic that concerns all human beings. No matter what career path students choose in life, the environment is directly or inexplicably linked to their work and health. While the importance of being aware about the environment cannot be contested, one must also pay due attention to how these topics may be dealt with students, specifically at the undergraduate level. At this age, students already have nascent opinions and perspectives formed and are at a better stage to choose their career paths. Merely dabbling with topics around pollution and global warming may not be very relatable for the students who are already on their chosen track of studies. Further, esoteric conversations around environmental themes have their own limitations and they may not serve as enough motivation for students to take up projects in the area of environment unless they find it relatable. Therefore, it becomes imperative to infuse topics of environment within their UG curriculum in a way that is more relevant and contextualized to them.

Engaging in sustained projects within their curricular topics whilst touching upon environmental themes was a useful intervention. As one can see from student responses reflected in their project reports, students made personalized connections of the theme to their daily life, expressing a sense of self-realisation and awareness. They also engaged in several hands-on activities and engaged in problem solving. Some topics also provided an opportunity to think creatively in order to solve a problem. Further, many of the projects included scope to develop 21st century skills that are core to students' holistic development. They engaged in preliminary forms of data collection like conducting interviews and surveys. They also collated their data and made an attempt to interpret their data. Feedback from surveys also indicated that students felt that they had got an opportunity to develop their research skills, communication abilities, build their confidence and hone their collaborative skills. Further, they also reported being more aware of their environmental values. Based on their feedback, our way forward will include bringing in more expert or mentoring sessions to scaffold student projects. Since they are working on these new topics for the first time, more hand-holding may be needed at the initial stages which could be achieved by having more facilitative workshops on data collection methods, documentation and team building exercises. This could be achieved in several ways. Apart from external experts, the students may also interact with their seniors who would act as mentors for the junior groups. Additionally, orientation sessions for teachers to help in the facilitation and implementation of this interventional project work can be coupled with the student project work, so as to enhance the scaffolding process offered to the latter. Overall, these insights indicate that there is a lot of scope to include interdisciplinary topics at the undergraduate level. This is not only the requirement of the New Education Policy (NEP 2020) but also serves as a meaningful way to address environmental themes whilst keeping students' core curricula and 21st century skill development within scope of the intervention.

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An Exploration of Higher Education Teacher Education programmes: During and post-COVID-19

*Sneh Bansal**

Abstract

The higher education system in India is one of the largest systems in the world with around 1000 universities and 50,000 colleges and institutions. These, together, cater to nearly 39 million students. The COVID-19 pandemic has significantly affected the higher education system including the teacher education institutions. India too, like many other countries had to shut down their institutions and moved unexpectedly to online teaching and learning. The teacher education programmes in India are heavily dependent on the conventional approaches to teaching-learning and less is evident about the effective integration of technology in teaching. Literature reviews indicated that researchers have not examined how well the student teachers are able to learn the course content and obtain practical knowledge about the profession in the context of teacher education. It is therefore important to explore how the student teachers cope with the learning situation during online instructions in teacher education courses, particularly in the pandemic situation when the New Education Policy (2020) has been released. The purpose of the study is to assess the degree to which pre-service teachers in teacher education programs can manage the theory and internship components of online learning during the COVID-19 epidemic. The method selected was qualitative research through an open-ended questionnaire that asked student teachers to reflect on their experience of learning in the teacher education programmes they took after all instruction went online along with the challenges they encountered which affected their learning in theory and internship component. The implications of this study for the new normal in the teacher education programmes in the post pandemic world focusing on implementation of NEP 2020 in the light of teaching, learning and assessment practices was discussed.

Key words: *Higher education, teacher education programmes, NEP (2020), online/ blended education, post pandemic, online internship, online teaching, ICT initiative*

Introduction

The New Education policy (2020) has replaced the 34-year-old National Policy on Education framed in 1986. It laid stress on the transformation of teacher education in order to professionalize teaching as a profession. Teacher education needs to build capacities in the teacher to construct knowledge, to deal with different contexts and to develop the abilities to discern and judge in moments of uncertainty and fluidity, characteristic of teaching-learning environments (NCFTE, 2009). A new and comprehensive National Curriculum Framework for Teacher Education, NCFTE 2021, will be formulated by the NCTE in consultation with NCERT, based on the principles of this National Education Policy 2020. NEP (2020) stated – "Teacher education is vital in creating a pool of school teachers that will shape the next generation. Teachers must be grounded in

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Indian values, languages, knowledge, ethos and traditions including tribal traditions, while also being well-versed in the latest advances in education and pedagogy". "Teacher education means programmes of education, research or training of persons for equipping them to teach at pre-primary, primary, secondary and senior secondary stages in schools, and includes non-formal education, part-time education, adult education and correspondence education" (The NCTE Act, 1993).

Several Commissions/ Committees were appointed after India's Independence to make recommendations on higher education development including teacher education which emphasised on the professional preparation of teachers: University Education Commission (1948-49), Secondary Education Commission (1952-53), Ford Foundation Term (1954), Pires Committee (1956), Education Commission (1964-66), National Commission on Teachers–I (1983-85), The National Policy of Education (NPE) in 1986, The Acharya Ramamurti Committee (1990), Yashpal Committee (1993), National Knowledge Commission (2007), National Curriculum Framework for Teacher Education (NCFTE) 2010, Centrally Sponsored Scheme of Teacher Education, 2012, J. S. Verma Commission (2012) . NEP (2020) also refers to Justice J. S. Verma Commission (2012) recommendation and emphasised an urgent need of revitalization through radical action, in order to raise standards and restore integrity, credibility, efficacy, and high quality to the teacher education system (para. 15.2). The novel epidemic situation confronted teachers with entirely new challenges and more complicated struggles with online teaching (Abiky, 2021). Guidelines were issued for compliance by all NCTE recognised TEIs related to online classes which included TEIs should explore the possibility to encourage technology enabled learning as well as conducting online classes. Internship and field engagement domain shall be as per the direction of the affiliating body/University /Institution under the prevailing situation. The Ministry of Education (MOE) had taken various initiatives to promote digital learning under 'National Mission on Education through Information and Communication Technology' (NMEICT) during the pandemic to provide effective learning during pandemic. A comprehensive digital initiative of the Indian government covering the wide spectrum of school and higher education was taken to facilitate access to education such as PM eVidya, Swayam Prabha TV Channels for open schools and pre-service education, E-textbooks, and National Repository of Open Educational Resources (NROER) (https://www.education.gov.in/hi).

Recent studies have highlighted the challenges faced by the student teachers and teacher educators during the online teaching along with the opportunities and support (Patra, Sundaray, & Mahapatra, 2021; Yapar & Dayananda, 2022; Hill-Jackson et al., 2022., Hertz et al., 2022; Dennen, 2022; Arslan, 2022; Mulvihill, 2022; Ugalingan, 2021). Yapar and Dayananda (2022) found teachers and administrators perceived many challenges in teaching online and much disadvantages as compared to the benefits/ advantages in teaching online. "Effective support and opportunities for teachers to develop and apply their competences is crucial for maintaining both motivation and high standards in the profession" (Hertz, 2022). Patra et al. (2021) identified internet accessibility, awareness of knowledge of faculties and students in technology and lack of technical support are the major concerns and challenges faced by the higher education teachers during online teaching. However, Arslan (2022) found teacher candidates were more positive towards assessment of learning during online as they perceived online tests as more independent and comfortable in the home environment and without a proctor. On the other hand, possible technical problems during the test were one of the frequently mentioned issues in the student views regarding online testing. However, Debrah et al. (2021) found that the expense of internet bandwidth, a lack of infrastructure, and bad internet connectivity

made online teaching ineffective. University students perceived a lack of student-teacher interaction, an inadequate home learning environment, and the ability to avoid direct participation during the video call as the major concerns, according to Oliveira Dias, Albergarias Lopes, and Teles' (2020) study on students' engagement in online learning. One of the key components of becoming an effective teacher is completing an internship, which offers the chance to gain first-hand experience with carrying out the responsibilities and obligations of a teacher (Mante-Estacio, & Ugalingan, 2018).Student instructors are supported in reflecting on their own teaching experiences during their internships, and this process may help them form their beliefs and motivating orientations toward teaching. (Michos et al. 2022).According to Ugalingan and Valdez's findings published in 2021, the internship experience presented obstacles in terms of technical issues with online instruction. However, chances for cooperation, learner autonomy, and modeling tactics were also reported.Online internships, according to teacher educators, are not possible and are seen as a difficult undertaking for institutes of teacher education (Cho & Clark-Gareca, 2020).The current study is in line with ongoing discussions about various approaches to carrying out teacher education programs when a pandemic is occurring. The online theory and internship experiences of the student teachers with regard to teaching, community engagement, participation in extracurricular activities, and the work culture of the school are, however, only partially revealed by empirical investigations.

Research Questions

The paper seeks to address the following research questions:

- In what ways the online learning experiences in theory subjects was helpful to pre-service teachers and how they cope with the challenges brought about by the pandemics in the learning process?
- What are the student teachers' online internship experiences with reference to teaching, community engagement, participation in extra activities and work culture of the school and what challenges do pre-service teachers encounter during online internship programme?

Further, the paper also proposes a framework for the TEP with focus on the vision of NEP 2020 considering the key inferences and analyses of the circumstances that might be made in the post-pandemic era in the discussion section.

Methodology

The current study used multiple data collection methods, namely online open ended questionnaire survey and semi-structured interviews, to achieve the triangulation of data. An open ended questionnaire was devised to collect information about online learning experience of the lecture, challenges encountered in the sessions and online internship experiences as a part of the teacher education course with the in habitations and lesson learned. The open ended questions were intended to allow participants to record the points which they saw as most relevant. The survey was done through google form which were given to 272 students pursuing elementary and secondary teacher education course from the different parts of India from September and October 2021 at which time teacher education colleges were completely or partially to be opened. The teacher education institutions situated in both rural and urban parts of India were selected. A semi- structured interview was done to determine the veracity of the participants' reflections with 15 student teachers who have completed the questionnaire and the interviews were conducted as the video call lasted for half an hour on an average and were later transcribed. Each student teacher described their learning experiences of the theory and internship component during the COVID-19 outbreak.

The participating student teachers pursuing elementary (20.4%), secondary (general) with 75.6%, secondary (special education) with 2.2% and post-graduation programme (4%) in education, 89.6% were female; 10.4% were male. 66.7% of the student teachers were from institutions situated in urban area and 33.3% were from rural area. The summary of the demographic profile of the sample participants is given in Table 1.

In analysing the data, codes were identified from the open ended responses and interviews. The repetitive pattern of keywords across the data was identified which were further classified into themes. From the data, themes were classified as challenges/ concerns and opportunities / benefits of online teaching and learning responded by the student teachers. There were several themes found, which can be divided into opportunities and problems.

Results

Due to the sudden shift to online teaching and without much preparation, dynamics of communication and effective implementation of online classes were the major concerns (Tarrayo & Anudin, 2021; Ugalingan, & Valdez, 2021). For designing an effective learning environment, learner centric approach, meaningful online teaching tools and technology and alternative means of assessments and assignments are the key components (Carmen Carrillo & Maria Assunção Flores, 2020).

The succeeding sessions elaborate on the experiences of challenges and opportunities of the student teachers in theory and internship component.

Table 1

Demographic profile of the sample participants

Demographic Variable		**N= 168 Percentage**
Gender	Female	89.6%
	Male	10.4%
Age	17-19	3.3%
	20-22	21.5%
	23-25	35.6%
	25-30	23.3%
	30 and older	16.7%
Course	D.El.Ed.	20.4%
	B.e.d. (general)	75.6%
	M.ed	4%
	B.ed Special education	2.2%
Locale	Urban	66.7%
	Rural	33.3%

1. Experience of online learning in context of the theory subjects

1.1. Opportunities

The results of the study indicate that students were satisfied with the online teaching for theory subjects been imparted by the teacher educators. It reflected the preparedness of the teacher educators for online teaching. It can be concluded that only 8.9 per cent of the teacher trainee have shown concern regarding the learning of the theory component during the pandemic. However 91.1 per cent of the teacher trainees were satisfied with the online teaching related to theory component and majority of them experienced it learnable experience though they mentioned it was difficult in the initial phase of online teaching but with the time, got adjusted and made a new learning online experience. From the key words, major themes as a learning experience during online teaching classes that emerged from the responses are: usage of tools and technology, varied pedagogical approaches, enhancement in the communication skills, flexibility of class participation time and self-paced study were the key factors that contributed to the students' positive experiences. Although the difficulties seem to influence both teachers and students, faculties and teacher educators have created techniques to boost their interaction with student teachers. In particular, using chat features in Zoom or Whatsapp or cloud-based platforms/apps (like Google Docs) has allowed them to engage in activities with their fellow students and teachers. The online learning experience of the student teachers for theory classes had facilitated learning opportunities while there were challenges also but it has been discussed separately in the next section.

Table 2

Grade, percentages, codes and themes emerged from the participants responses

Grade	Percentage	Codes	Theme
Poor	8.9%	Disinterested, network issue, online wasn't as good as offline,	Internet connectivity
Good	78.6%	Nice, amazing, comfort, learning of apps, safe and productive, social connected through Social media , interactive, google as best source of knowledge, self-learning, time saving, boost of confidence, development of cognitive skills, cooperation of teachers, video and ppts as a source of learning, doubt clearing sessions	Technology enabler, self-confidence, cooperation of teachers, technology tools
Mixed	12.5%	Not good but convenient, compromise, eye sight issues, usage of technology, teacher cooperation but poor social and emotional development	Health issues but convenient, cooperative teachers but lack psychological development

During an interview, students reported on the varied teaching skills used by the teacher educators with a scope of wider exploration of the resources. This was clearly explained by the student teachers. For instance:

It was a great experience and I became more social and specially it made me more close to my mates and teachers. It also helped me to learn something new. Online Learning is helpful among students and teachers as it increases the core area of exploring things online and students

also increase their pace through moocs courses. In online learning we have to come across many phases. We get to know the use of technology and also the theory part was taught in a unique way with the use of technology.

2. Challenges

Students faced many technical difficulties that hinder and slow-down the teaching–learning process (Favale et al., 2020). Similar to other studies (Adedoyin & Sokyan, 2020; Donitsa-Schmidt & Ramot, 2020; Rospigliosi, 2020; van der Spoel et al., 2020), access to internet was the major challenge faced by the student teachers. Online Internet connectivity, non-access of library and other material, lack of clarity of topics, lack of face to face interaction, indiscipline, health issues related to eyesight and lack of conducive learning environments were the few factors that inhibited learning during online classes. Wang, J., Yang, Y., Li, H., & Aalst, J. (2021) emphasised online instructors should create a friendly online learning environment, facilitate active discussion and purposeful reflection and create opportunities to promote students' open communication, group cohesion and meaning construction. Table 3 clearly indicates the major challenge encountered by student teachers during the online classes was internet connectivity and least is the poor learning environment due to distractions at home and lack of proper sitting space in a silent environment.

Table 3

Themes, categories, percentage and ranking of challenges experienced by student teachers during online theory classes

Themes	Percentage	Ranking	Codes
Internet connectivity	30.7%	1	Lack of clear voice, disconnected in between, invisibility of ppt, technical problem due to weather, limited storage of data, time to connect
Non-access of institution library and other resources	3.5%	7	Interaction with students through online mode, sharing e- content, Unavailability of study material, non-availability of all topics in one book
Lack of clarity of topics	13.5%	5	Maths and science subjects, detailed description missing, terminology , computer subjects,
Lack of face to face interaction	16%	2	Practical experience, lack of creativity and explanation, imagination skills
Indiscipline	4.5%	6	Lack of seriousness of batchmates, distractions
Eye sight	14%	4	Gazing of screen for long duration, using mobiles due to lack of laptops/ desktops
Poor learning environment	2.5%	8	Too much distraction at home, missing of peaceful environment
No Challenge	15.3%	3	online way to learn is good platform, nothing, learning improved, good, cooperative, accessible and equipped teachers, more interested online

Factors related to connectivity, sense of isolation, health concerns, difficulty in practical subjects are exhibited while they shared experience during interviews. One of the student teachers narrated:

I took most of the classes online during the Teaching Practice as the schools were closed due to COVID-19 pandemic. I teach students offline for only 6 to 7 days. But these 6 to 7 days helped me to understand the real classroom problems and needs of the students as many of the students were not able to attend online classes conducted by me as they belong to rural areas where there are a lot of network issues. But, I on my behalf took all the online and offline classes honestly using proper TLM like charts, paper cuttings, real objects and models etc. of science and mathematics so that students may not face any problem in understanding any topic.

Experience of online learning in context of the internship

1. Teaching experience during Internship while delivering online classes in the internship school. The online internship experience that was conducted through online facilitated learning opportunities. Student instructors are given a learning environment where they can watch and model excellent teaching since the teaching internship enables them to adapt their teaching practices (Borg, 2003). The results showed around 11.9 per cent of the student teachers showed concern of online learning in the context of the internship: Teaching subjects and 88.1 per cent are satisfied with the online internship programmes. Despite the difficulties they had when teaching online, they managed to discover ways to adapt to the new teaching environment. Student engagement, opportunities to ask questions, enriched learning experiences were the factors which facilitate the online internship component in reference to the online classes taken by the student teachers in the intern schools. Table 4 further depicts the categories and themes with percentages of the responses reported by the participants.

Table 4

Grade, percentages, Codes and Themes emerged from the participants responses on Internship

Grade	Percentage	Codes	Themes
Not Satisfied	11.9%	Limitations in online teaching, real classroom experience missing, online teaching requires lot of efforts (practical subjects- science, physical education, mathematics, environment), inaccessibility due to remote areas, low connectivity, manage the whole class discipline	Low Internet connectivity, Difficulty in Practical subject, Discipline issue
Good	31.5%	New ideas for learning, engagement of students, observations of teachers, scope of questioning, nice experience	New ideas, students engagement, questioning skills
Excellent	56.6%	Enriched and great experience	Enriched learning

Student teachers explained they all were equipped with the technology and used online apps during their teaching. However, students with practical teaching subjects (Mathematics, science and physical education) were not very satisfied. Teacher trainees with Social science and English Pedagogy were much satisfied. One of the interview transcripts that display their experiences:

This internship has given me even more real-world experience than I had before this experience. This Internship has been such a growing experience for me. I learned how we can teach students by using different skills of introduction, how to illustrate with examples, how to use blackboard while teaching and many more.

2. Internship experience in extra-curricular activities/community engagement

Internship is a process where student teachers actively and purposefully interact with others to bring a reality to their teaching which enables them to appreciate the varying ways in which theory informs reality and reality modifies theory. Classroom Community engagement has an important role to play in enriching the teaching, learning and research activities of teacher education (Howard, Peter & Butcher, 2007). Majority of the student teachers reported a positive experience of online learning in the context of internship and extra-curricular activities. Major activities in which the student teachers participated during the online internship were debate and discussion on different topics, Summer Camp Activities, skill development programs and online cultural activities. Table 5 shows the responses of the students during online internship with reference to engagement in community and extracurricular activities.

Table 5: Responses of the student teachers for online internship: extra-curricular activities/ community engagement)

Responses	Percentage
Digital literacy	21.5%
debate and discussion on different topics	17.8%
Summer Camp Activities	18.2%
Skill development programs	10.5%
Online cultural activities	32%

The experiences of the student teachers on school-wide projects, activities and acquiring organising skills in some form of extracurricular activities had stated positively. For instance:

During a pandemic, of course, there is no possibility of going outside and playing in the playground or celebrating the independence day, School Annual Functions, etc. So there were many challenges on how to engage students in some extra-curricular activities but as said every problem has a solution, so we organised online chart making competition, poem reciting, debates, essay writing competition so that students can participate in these co-curricular activities.

3. Challenges for Online Internship of Teacher Education Programme

Although the student teachers in the study were accustomed to using online platforms for instruction, they encountered difficulties during the online internship period. Major challenges emerged from the responses including programmes including internet connectivity, communication and lack of clarity of the practical subjects, specifically science and mathematics and absence of formal evaluation of performances. Unavailability of proper digital tools, no internet connections, or Wi-Fi connections can cause a lot of trouble due to which many students might lose out on learning opportunities (Dhawan, S., 2020). Connectivity issues in the remote areas were also one of the major challenges encountered by the student teachers.

Table 6

Themes, categories, percentage and ranking of challenges experienced by student teachers during internship

Themes	Percentage	Ranking	Codes
Internet connectivity	38.2%	1	Technical problems, connectivity issues, low network, inaudible voice, contact with rural students
Communication problems	29.5%	2	Difficulty to explain, lack of content clarity, lack of response by students, lack of interaction with the teachers
Lack of clarity of topics	13.5%	4	Maths and science subjects, detailed description missing, terminology , computer subjects, absence of formal evaluation of performances
others	18.8%	3	Eyesight, adaptation of new methods, time management, lack of support of school teachers

During the online internship programme, the student teachers also pointed out low attendance of the school students at the time they take classes along with the observations by mentor, school teacher of the subject. However, they supported the students with plenty of online tools in the form of pdfs/ mobile apps which is important for an effective and efficient learning environment. For instance, one of the student teachers stated:

The major problem was the attendance of the students which was very less. As many of the students belong to poor rural families which can't afford a phone or a monthly internet pack. So attendance of students in online classes was very less which was a big problem.

The results showed mixed responses for online teaching. Along with the issues with internet connectivity and a distracted environment at home, student teachers also expressed positive experiences.

Discussion

Previous studies have shown that students experienced online teaching challenges and they were successful in finding ways to adapt to the new educational environment. (Ugalingan, 2021; Abiky, 2021.) but hardly any study addressed both the theory and internship related components of the teacher education programme of online classes. Cho & Clark-Gareca (2020) noted the unprecedented challenges and facilitation of online learning for the education institutions due to COVID-19 as an "alternatives continue the implementation of teaching and learning programs". Technical conditions, lack of computers at homes, lack of clear and continuous interaction with the internship school and attending classes on mobile phones leading to health issues were few issues which hindered the student teachers from gauging their own ability to understand what they were teaching in the school during their internship programme (Adedoyin & Sokyan, 2020; Donitsa-Schmidt & Ramot, 2020; Rospigliosi, 2020). If we look at the Vision of NEP 2020, it clearly states: "Teacher education is vital in creating a pool of schoolteachers that will shape the next generation" [NEP 2020, 15.1] and focused on using experiential learning as a pedagogical approach.

Barnett (2012) asked educators "what does it mean to learn for an unknown future?" (p. 65)., What does it mean to gain work experience in an online, social distancing

world and what should be the focus of that experience and learning?"

These questions focused on the pedagogical problems and technical difficulties faced by higher education online and at the same time how to face instability which may arise due to social and economic changes.

Alammary, Carbone & Sheard (2016); Bayyurt & Kerestecioglu (2018) and Castro (2019) emphasised on using Blended learning in higher education. Mishra & Koehler (2006) highlighted "development of three types of knowledge in pre--service teacher education with the integration of blended learning: content, pedagogical, and technological knowledge". NEP 2020 focused on developing 21st century skills among the students. 'Flexibility and adaptability' due to the sudden change in the social and economic times make learners more self-independent and self-directed. As suggested by Saks & Leijen (2014), for student teachers to be more resourceful and agile, they would be responsible for finding the school for internship and conduct the teaching and learning related activities- which make them self-directed learners. However, the internship will then comport with all the other requirements of the academic program and be facilitated by faculty while the student remains responsible for learning tasks, and that is the self-regulated component. Zhao & Johnson model (2012) includes the following essential elements, "instructional strategies, digital technologies, and delivery methods ' (p. 167) based on planning, strategising, evaluating, and comprehending. Zhao & Johnson (2012) point out that the "learner characteristics of self-efficacy, task-value beliefs, motivation and goal orientation are important to the SRL framework". These characteristics are also important to school organization and are considered by the school management and authority. Roy and Sykes (2017) recommended "there are strong advocates for recruiting interns who fit the vision mission and philosophy of the school in their knowledge, skills, abilities, attitudes, and needs (KSAAN)".

Reflective teaching and flipped classrooms are also the answer to the online teaching in teacher education programme. One significant approach aligned with the NEP 2020 for teacher education programme for the theory and internship part is the "Community of Inquiry" (CoI) framework as given by Briant and Crowther (2020). This model indicates that experiential learning is initiated as a result of:

- cognitive presence (e.g., the ability to construct meaning through ongoing reflection and discourse),
- sustained through evolving social presence (a support to the cognitive process that enables the development of relevant relationships that encourage ongoing engagement),
- results in learning as an outcome of teaching presence (the design of instructional methods that intentionally reinforce critical reflection and inquiry) and
- collegial presence (collaborative, supportive reflective exercises through internship school teachers.

"The Community of Inquiry" model not only establishes a framework for realizing the potential for the use of reflective pedagogies in virtual environments, but also identifies important components to high quality and accessible learning" (Guthrie & Mc Cracken, 2010).

Conclusion

This study provides a theoretical insight into the online learning opportunities and challenges in theory and internship component experienced by student teachers during the COVID-19 pandemic. Given that educational pursuits at these periods necessitate investigating possibilities on uncharted ground, this investigation shows that Online Internet connectivity, non-access of library and other material, lack of clarity of topics, lack of face to face interaction, indiscipline, health issues related to eyesight

and lack of conducive learning environments appear to be relevant challenges for student teachers in theory component part along with lack of clarity of the practical subjects specifically science and mathematics and absence of formal evaluation of performances during internship while implementing lessons in an online environment. However, opportunities for learning online tools and technology, varied pedagogical approaches, enhancement in the communication skills, flexibility of class participation time and self-paced study along with online participation in varied extra-curricular and community activities via debate and discussion on different topics, summer camp activities, skill development programs and online cultural activities appear to help student teachers in their internship during the pandemic.

The study has certain limitations too. Firstly, the opinion of the teacher educators along with the institutional governance and support during online teaching could also be considered. In addition, the universities and institutional practices for evaluating the learning outcomes of the teacher education programmes during online classes could be studied.

Given the unique dynamics of education and learning during these difficult times, when we are putting NEP 2020 into practice, there are several directions that researchers and practitioners can pursue in the teacher education programme. Further, the proposed framework : self-regulated (SRL) (Saks & Leijen, 2014) and community of Inquiry (CoI) (Briant & Crowther, 2020), Garrison et al., 2010; Sanders & Lokey-Vega, 2020) framework can be used as a guiding and directive framework in the light of NEP 2020 for the on-line and offline (blended mode) educational practice in post covid pandemic with due investigation and incorporated for improved pedagogical opportunities in both theory and internship component of the teacher education programme for each of the stages—Foundational, Preparatory, Middle and Secondary.

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MOOCs a Renaissance in Indian School Education: Review in Context of SARS-CoV-2 and NEP2020

*Madhuri Hooda**

Abstract

The education systems of all the countries of the worldhave faced unprecedented challenges due to Covid-19. India also sailed the same boat along with some of its inherent challenges of its education system like; poor access, disparity in access to different socio-economic sections of society, poor quality, based on information transaction, poor skill development, fragmented system and many more. In response to this,Indian schools had swiftly adopted emergency remote teaching. When Indian school system was being badly shaken with these turbulences, it had a ray of hope to combat all these challenges and the country came out with NEP 2020. Implementation of NEP 2020 and Covid-19 effects are going simultaneously. NEP 2020 is envisioning online education and MOOCs as panacea for most of these challenges and Covid-19 is also pushing Indian school education system for a shift to online mode of education. MOOCs arenovel educational phenomena gaining momentum and popularity worldwide due to its potential to address the issues of access, equity and quality. The article has critically discussed the impact of Covid-19 over Indian school education, along with the aspiration of NEP to radically transform the whole Indian education system. Various digital initiatives (ATLs, NEAT, DIKSHA, ePGPathshala, etc.) by MoE have been discussed. Article has also thrown light on NEP's vision of leveraging ICT in teaching and learning; and developing MOOCs as a new techno pedagogical innovation. The article also attempts to explore the real potential of MOOCs in addressing the issues of school education along with some inherent challenges.

Key Words: *Massive Open Online Courses, MOOCs, School Education, Online Education, SARS-CoV-2, Covid-19, NEP 2020.*

Vulnerable children: Indian Scenario

India is facing transformation in school education with the implementation of NEP 2020 and forced evolution of school education due to Covid-19. Although the changes in education systems have been continuous over a period of time, substantial and sudden transformation in education systems all over the world are being observed in the post-2020 period. The entire world is facing the biggest changes in education systems (UNESCO, 2020). Indian education system faced an irreversible learning crisis in this pandemic (Sharma, A, 2021). The Indian education system is facing a dual impact of distancing between teachers and students due to COVID-19 pandemic and the release of the National Education Policy, 2020 by the Ministry of Education recently (Saxena & Khandelwal, 2021). NEP is a very significant policy in the historyof the Indian education system. The release of the policy is a positive and fresh change amid the challenges due to Covid-19 and the consequent negativity prevailing in India (Kurien & Chandramana, 2020).

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At a stage when India was working on NEP 2020, the pandemic Covid-19 intervened. Because different countries are interconnected, the entire world faced the spread of Covid-19 which could not be stopped at international borders. It had drastically disrupted everywhere including India (Patil, Ghadge, Dhas, Moholkar, 2021). The countries grappled with the pandemic by putting restrictions on the mobility and lockdown periodically. It put an unprecedented test on the education systems of different countries. Moreover Covid-19 may lead to a likely slow rate of growth of Indian economy in the coming immediate future and it would badly affect the expenditure on education (NIEPA, 2020). UNESCO has declared education a universal and birth right of every born child and primarily focuses on equitable quality-based education and lifelong learning [Education-2030]. Indian school education has faced many challenges like: poor curriculum and instructional methods, shortage of teachers and lack of communication between teachers and students (Chahal, 2015) which have also been mentioned in NEP 2020. Sustainable Development Goal 4 of 2030 which has been already adopted by India in 2015 also aims to ensure inclusive and equitable quality education and promote life-long learning opportunities for all by the year 2030 (p. 3). For a developing country, like India, it has been a challenging task to provide its young, talented and aspiring minds an easy access to education based on equity and quality. NEP 2020 is envisioned as a policy to give a big leap to Indian Education with a tight grasp on the present Indian socioeconomic landscape and to combat immediate future challenges (Kumar, 2020).

Covid-19 Led a Move to Emergency Online Learning

Initially in March 2020, when India was to go for the first lockdown, Whatsapp helped school teachers to connect with their students. Education systems of almost all developing countries were badly shaken by sustained closure of educational institutions and international borders. School education system swiftly transitioned from traditional classrooms to online teaching. Online classes were used by different schools with the help of different platforms like WebEx, Google meet, Go to meeting, Microsoft teams, etc. With significant demand, there has been a rise in many online learning platforms which offer open and free access to the learning resources. And even for keeping people mentally stress-free they were to engage in online learning (Jena, 2020). During this period the educational community put concerted efforts for continuity of the teaching-learning process. Pandemic Covid-19 has forced scrambling of educational material and online platforms which have posed great threat to teaching profession and its autonomy (UNESCO, 2020). As per International Association of Universities (IAU),Covid-19 Global Impact Survey, 2020, 60 per cent of education institutions have gone through virtual mobility or collaborative online learning as an alternative option to face to face mode of teaching. As per OECD's recent Economic Outlook, the most optimistic outlook also endorses a major global recession (OECD, 2020). And this slowed down economic growth with spread of virus may influence the allocation of the budget for the education sector. This may also impact the slower rate of growth in budget yearly (AI- Samarrai, Gangwar & Gala, 2020). Education with digital platforms cannot be imagined without pedagogical concerns. It should also involve human relations between teachers and students. The teachers who were not equipped with ICT based pedagogy or not well versed with these online platforms had to struggle with conducting online classes (Tari & Amonkar, 2021). Now it has become very clear that the impact of Corona virus may be longer than it was expected. The continuous lockdown and social distancing forced the Indian education sector to evolve. Education is transforming drastically with a distinctive rise in online

education and teaching remotely with various digital platforms.

In India, learners from privileged backgrounds and those who were eager to learn made their way to alternative learning opportunities but the learners from disadvantaged backgrounds remained shut out when their schools were closed. The learners who already had barriers in accessing education like children with disabilities and from remote areas either had limited or no education and they lagged behind (UNICEF & UNESCO, 2021). It had ahuge impact on people medically, socially, and educationally; irrespective of grounds such as nationality, level of education, socio-economic status and gender. This pandemic forced the education system to move from traditional teaching learning process to emergency online teaching learning, and the children in poverty all over the world who had to rely on school for their educational material, uniform and even meals, suffered a lot. This pandemic exposed the inequalities which were inherent in our society and the poor ones were hit the most. The school education systems all over the world have to go for emergency online education. This also affected safety and legal status of international students in the host countries (OECD, 2020). With innovative teaching practices like ICT based pedagogy and MOOCs better curriculum and instructional methods can be devised (Radhika 2018).

NEP 2020: A Desirous Indian Education Policy

Manak (2020) stated in his research paper that education in India is not based on an efficient mechanism to ensure accountability and consistent performance of teachers. Unplanned expansion has ledto institutions with substandard quality. Tilak (2020) discussed in his research paper that education in India is facing excessive hike in student's fee and privatisation. Knowledge landscape in the world is undergoing change and the unskilled jobs may be taken over by the rise of big data, machine learning and artificial intelligence. With quickly changing employment and global ecosystem, India is to go with the recent call of Prime Minister Sh. Narendra Modi on leveraging the fourth Industrial Revolution for leading the country to new heights (Sreeramana & Shubhrajyotsna, 2020). Education in India needed to create learners with creativity and innovative abilities and to adapt and absorb new material in dynamic fields. India should go for an education system that can ensure equitable access for high quality education to all learners irrespective of any differences (NEP, 2020). National Education Policy is the first major policy which caters school education to higher education in the 21st century. It envisions delivering high quality education with universal access for maximum utilisation of human talent and resources for the welfare of humanity. Poor quality of teaching learning process, lack of motivation and enthusiasm among learners and mismatch between education delivered and demands of jobs and industry are some of the factors haunting Education (NEP, 2020). The vision of equitable and quality education has been hurdled by the existing huge regional diversity preventing many young learners living in remote and deserted lands, from gaining quality education. Covid-19 has also put many challenges in front of the Indian Education system and NEP 2020 is a ray of hope and it is expected to reshape the education system. NEP came at that time when decreasing GDP due to Covid-19 all over the world is a matter of concern (Kumar, 2020). India needs an education system which can overcome barriers of equity based access and quality education.

Significance of the Study

NEP2020 emphasises on making learning 'holistic, integrated, enjoyable and engaging' by bringing root level restructuring of school curriculum and pedagogy (p. 11). It focuses on the 'how to learn' approach and discourages rote learning. Curriculum shall

be made need-based, and to be transacted through new pedagogies, i.e., "inquiry-based, discussion-based, discovery-based, analysis-based". 21st century skills among learners shall be inculcated including critical thinking, creativity, collaboration and communication, problem solving, leadership, humaneness and sensitivity. Traditional education had become insufficient in all respects to meet these high demands. NEP has drawn its attention to integration of technology in all phases of education. It stresses ICT-based, internet-based learning making best use of available digital technologies and advanced pedagogies. MOOCs,one of the novel trends in the field of education, are recent educational innovations making learning highly interactive, enjoyable, engaging and useful as NEP suggests. They are breaking all constraints of traditional setup, like time, space, place, and cost. School education is a link to higher education which is further linked with social, economic development of a nation. A poor school education results in poor national development. Covid-19 has also severely impacted the offline delivery of education, demanding a new online approach for education. Therefore, designing, developing and validating MOOCs for school education to promote access, equity and quality of education is the need of the hour. The present paper has taken up the task of reviewing school education in the light of the vision of NEP2020 along with adverse effects of pandemics. The results of the study shall be significant to address the main issues of Indian School Education i.e. access, equity and quality. The findings shall act as inputs to develop MOOCs for better school education.

Objectives

- To study the current status of Indian School Education system in context of access, equity and quality.
- To study the intermixed effect of Covid-19 and NEP in reshaping Indian School Education.
- To discuss major educational (digital/ ICT) initiatives by MoE, GoI for School Education
- To explore potential in MOOCs for addressing issues of access, equity and quality in Indian School education.

Research Methodology

The present research paper adopted a descriptive research methodology. Various data sources involving use of different government websites (MoE, NCERT, and NIOS), official documents (NEP, UDISE), statistical reports, national policies and the available literature related have been explored and reported. Researcher's own professional experience also contributed to adding insight to the answers of the objectives / research questions.

Current Status of Indian School Education: UDISE+ Report 2021-22

Indian school education system is one of the biggest systems of the world having approximately 14.89 lakh schools, over 95 lacs teachers, and nearly 26.52 crore students from pre-primary to higher secondary level (p. 10). UDISE+ or Unified District Information System for School Plus provides up-to-date and authentic information about the school system for objective assessment and planning for further advancement. UDISE+ report provides us a status of school education in terms of enrolment, number of schools, number of teachers, number of students, gross enrolment ratio (GER), gender parity index (GPI), Pupil Teacher Ratio (PTR), etc.

As per the report, total enrolment for the year 2021-22 from pre-primary to higher secondary level was nearly 25.57 crore which is 19 lakhs more than the previous year. The report has shown a decline in the number of teachers by 1.95 per cent. Total number of teachers has decreased from 97.87 lakhs in 2020-21 to 95.07 lakhs in 2021-22. The GER of primary level was 101.3 per cent in the year 2018-19 which increased to 104.8

per cent in the year 2021-22. The GER for upper primary is 94.7 per cent in 2021-22 which increased from 87.74 per cent in 2018-19. The GER for secondary schools has reached 79.6 per cent in 2021-22, from 76.9 per cent in 2018-19. GER at higher secondary level has also shown improvement as it attained a level of 57.6per cent in 2021-22 from previous 50.14 in 2018-19 showing significant increase. GPI is in a balanced position at nearly 1 or slightly over 1. The PTR at all levels of school education is showing a good improvement from the year 2018-19 to 2021-22. Other parameters of school education, namely, infrastructure, books, facilities, have also shown a good improvement.

We can conclude that the quantitative changes in school education are on a positive track, except access (GER) at secondary and higher secondary level is far below than maximum. There is a great lack of qualitative changes (teaching, learning, assessment, values, etc.) as NCFSE2023 highlights basic restructuring in school curriculum to bring quality in education in schools. Quality is a chief concern before education stakeholders that the present article seeks to explore.

Emergency Remote Teaching due to mixed impact of Covid-19 and NEP 2020: Reshaping Indian School Education

India is emerging as a young nation with an average age in the range of 15-29 (Ministry of Youth affairs, 2014, p.10). It has a strong dearth of formally skilled labour force which presently stands at2 percent and far below the developed nations (Ministry of Labour and Employment, Report 2014, p.4). The main goal of our school system is to provide all the children of school-going age access to the schools. Through some major initiatives like Sarva Shiksha Abhiyan which is now named as Samagra Shiksha and RTE Act, Indian School System is moving towards universal enrollment but at later levels in school education serious concerns are raised in retention of students. There has been a significant steep drop out after grades 5 and 8 (NEP 2020). COVID-19 affected teaching and learning in schools, with two-thirds of them reporting that classroom teaching has been replaced by distance teaching and learning. The shift from face-to-face to distance teaching did not come without challenges, the main ones being access to technical infrastructure, competences and pedagogies for distance learning and the requirements of specific fields of study. Covid-19 not only interrupted teaching but also assessment. Many exams all over the world has been postponed or cancelled. Traditional exams have been replaced by online exams. As it was a new area both for teachers, learners and administrators; so, in assessments, larger measurement errors have been observed than usual. The learners at all the stages faced cancelled practical experiences and apprenticeships (UNESCO, 2020). This forced move to online learning with no training, poor connectivity, less prepared system resulted in serious concerns for education in general and online education in particular; poor user experience, poor mental health both for the teachers as well as for learners (OECD, 2020).

With adequate infrastructural facilities, appropriate use of ICT and making school education engaging the Gross Enrollment Ratio be increased to 100per cent. For children belonging to poor socio-economic status, Open and Distance Learning Programs by NIOS and other State Open Schools can be strengthened and expanded. Use of technology will help in strengthening the Open School System. Restructuring the school system, Curriculum and Pedagogy to5+3+3+4, focusing on skill-based education, enhancing flexibility in selection of subjects especially at middle school stage, including multilingualism have been the main proposed transformations as per NEP 2020. All the proposed transformations can be strengthened by the use of technology.

Digital Initiatives in Indian School Education

NEP proposes the use of digital technology

to enhance the learning experience of students. This includes the creation of e-content that can be accessed by students online, the development of digital libraries and repositories of educational resources, and the use of online courses to supplement classroom learning. The NEP proposes that digital technology be used to create a more personalised learning experience for students, where they can learn at their own pace and in a manner that suits their individual learning style. This is in line with the growing importance of digital skills in the modern world and the need to equip students with the skills and knowledge required succeeding in the digital economy. The NEP proposes several digital initiatives to achieve this goal.

NISHTHA as a digital program covers various aspects of education, including pedagogy,curriculum design, assessment and evaluation, and classroom management. The program is designed to cater to the needs of teachers at all levels, from primary to secondary, and across all subjects. The training is provided through an online portal that includes interactive modules, videos, and other learning resources. One of the key features of NISHTHA is its focus on digital technologies. The program includes modules on the use of digital technologies in education, including the use of online tools for teaching and learning, creating digital content, and using social media for educational purposes. The program also provide straining on the use of digital tools for assessment and evaluation, which can help teachers track the progress of students more effectively and provide personalized feedback(Gulam Hussein, 2021).

NEAT (National Educational Alliance for Technology) is a digital initiative launched by the Ministry of Education, Government of India, to provide a platform for educational institutions and Edtech companies to collaborate and develop innovative solutions for the education sector. The initiative aims to promote the use of technology in education, improve learning outcomes, and increase access to quality education across the country. NEAT provides a platform for Edtech companies to showcase their products and services to educational institutions across the country. The platform includes a wide range of educational resources, including e-books, audio-visual content, online courses, and educational Apps.

Educational institutions can access these resources and integrate them into their teaching and learning processes. One of the key features of NEAT is its focus on adaptive learning. The platform includes AI-powered tools that can analyse the learning patterns of students and provide personalised learning experiences. These tools can help identify the strengths and weaknesses of students and provide targeted interventions that can help improve their learning outcomes.

Atal Tinkering Labs (ATLs) is a flagship scheme launched by the government of India to promote innovation, creativity, and entrepreneurship among school children. The initiative ispart of the Atal Innovation Mission (AIM), which is aimed at promoting innovation and entrepreneurship in India.

ATLs are innovation workspaces set up in schools across India to provide access to state-of-the-art technology and equipment, such as 3D printers, robotics kits, and Internet of Things(IoT) kits, to students from Classes VI to XII. The labs are designed to foster a culture of innovation and entrepreneurship among children by providing them with the opportunity to explore and experiment with various technologies and develop innovative solutions to real-world problems. The ATL initiative is a major step towards promoting a culture of in novation and creativity among school children in India. By providing access to state-of-the-art technology and equipment, the initiative can help children develop critical thinking, problem-solving, and design thinking skills, which are essential for success in the 21st century. TheATL initiative has been a huge success since its launch, with thousands of schools across India setting up innovation labs under the program. The initiative has

not only provided a platform for children to showcase their innovative ideas and projects but has also helped create a pipeline of young entrepreneurs who can contribute to India's economic growth and development in the future.

DIKSHA (Digital Infrastructure for Knowledge Sharing) is a digital initiative launched by the Ministry of Education, Government of India, in 2017, aimed at providing quality e-learning content to teachers and students across India. The initiative is part of the government's efforts to promote digital education and make high-quality learning resources available to all,especially those in remote and under served areas. DIKSHA is a multi-channel digital platform that provides access to various types of e-learning resources, including textbooks, lesson plans, assessment tools, interactive videos,and quizzes. The platform is designed to support teachers in their classroom teaching and help them develop engaging and interactive learning experiences for their students. The platform is accessible through various channels, including web, mobile App, and offline mode, making it easy for teachers and students to access the resources anytime, anywhere. Teachers can use Diksha to create their own content and share it with their students, while students can use the platform to access learning resources and track their progress.

E-Pathshala is a digital platform that provides access to various types of e-learning resources,including textbooks, audio and video lectures, e-books, and interactive e-content. The platform is designed to support students in their learning and help them access quality educational resources anytime, anywhere, using a mobile App or web-based portal. The platform also provides access to subject-specific resources for different levels of education,such as primary, secondary, and higher education. It also offers resources in multiple languages, making it easier for students from diverse backgrounds to access quality educational content.

The government of Haryana has launched a scheme called e-adhigam to provide tablets to students in government schools. The initiative aims to improve access to digital learning resources and promote digital literacy among students. The tablets are pre-loaded with educational content and distributed to students in a phased manner starting from 5th May,2022 with a distribution of 5 lakh tablets.

NEP Envisions Integration of ICT in School Education

India, after facing a digital crisis in the field of education in pandemic times, paved her path through the digital education by some standard steps taken to bring the education fraternity close to technology and digitalisation. School education, being a high volume area of learning, has the highest target population. As per the AISES report published in 2016 covering 12,99,902 recognised schools, 79,036 primary schools were running in non-pucca building whereas more than 11,000 schools were running without any building. The report briefly defines the state of Indian schools in 2016. After a long chain of quality initiatives like SWAYAM, PRAGATI, ISHAN-UDAY, NISHTHA, DHRUV, EQUIP, NEAT, GIAN, SSA,RMSA etc. at different levels, India came to a position where it could effectively boost the learning of the students through digital learning methods (Chakraborty, 2022).NEP-2020 envisions for the bright future of school education in India. One of the key aspects of the NEP is the emphasis on the integration of Information and Communication Technology(ICT) in school education. The NEP envisions the use of ICT as a tool for enhancing learning outcomes and improving access to education. The NEP recognises that technology has become an integral part of our daily lives and that it can play a significant role in transforming the way we learn and teach. The policy document emphasises the need to provide students with access to digital tools and resources that

can help them learn better and prepare for the challenges of the 21st century. The NEP also recognises that the use of ICTcan help bridge the digital divide and provide access to quality education to students from all backgrounds. NEP proposes the creation of a National Educational Technology Forum (NETF) that can serve as a platform for collaboration between different stakeholders in the education sector. The NETF will be responsible for identifying emerging technologies that can be used in education and developing strategies to integrate them into the curriculum. NEP emphasises the need to provide students with access to digital devices and high-speed internet connectivity. The policy document recognises that access to technology is a key factor in ensuring that students can benefit from digital resources and tools. The NEP proposes the creation of a digital infrastructure that can support the use of ICT in education, including the development of e-content, digital libraries, and online courses. The use of technology to personalise learning and provide students with individualised learning experiences is one of the foresights of NEP-2020. The policy document recognises that students have different learning styles and abilities and that the use of technology can help teachers create learning experiences that are tailored to the needs of each student. NEP envisions the integration of ICT as a key component of school education in India. The policy document recognises the potential of technology to transform the way we learn and teach and proposes a number of measures to make this vision a reality. By providing teachers and students with access to digital tools and resources, and by developing strategies to effectively integrate technology into the curriculum, the NEP aims to create a more inclusive and equitable education system that can prepare students for the challenges of the 21st century.

MOOCs as a Renaissance in Indian School Education

The education system must work for enhanced human interaction and their well-being. Education technology should be used in a way to promote learning across distance, communication and collaboration. And this shift to online remote learning will eradicate inequalities (UNESCO, 2020). Digital devices have helped in liberation of learning from fixed geographical locations to anywhere in the world. With the help of sophisticated e- learning technologies and pedagogic approaches MOOCs have the potential to provide equality as their reach is for global participants (Jordan, 2014). On the review of the experiences of open learners, MOOCs attract diverse learners on the basis of geography, culture and academic backgrounds (Levy, 2011; Kop, 2011; Rodriguez,2012). And in the context of the Covid-19 pandemic crisis, the interest and enthusiasm in digital learning technology has increased exponentially (UNESCO, 2020). Traditional classroom learning experiences have been found inadequate to meet our growing learning requirements of 21st century school learners. It is high time to plan well and sincerely execute such a mechanism which can overcome the barriers of access, equity and quality which are haunting the visions of higher education in India (NEP, 2020). NEP 2020 advocated for the development of youth who are thoughtful, well-rounded, and creative individuals. Policy stresses on development of learners with “intellectual curiosity, scientific temper, creativity, spirit of service and with 21st century skills, productive contribution to society, constructive public engagement”.

Chea (2016) developed an insight into the fast changing trends in the field of education through his writings; one of them is “Benefits and challenges of massive open online courses.” He regarded MOOCs as the most novel, recent and innovative with respect to education. The paper explained about the massiveness of MOOCs in terms of its applicability to a huge number of learners

without any barrier of time and place but dropout rate is a challenging issue on one hand whereas overall cost of designing and developing MOOCs is also very high. Rolfre (2014) in his study stated that traditional education is mainly overcrowded with outdated teaching methods and pedagogies which failed to meet the diverse needs of 21st century learners.

MOOCs have revealed their abilities to overcome various barriers of traditional education by replacing obsolete methodologies, practices, attitudes and systems by advanced and practical teaching learning methods, high pedagogies, creative assessment tools, and developmental attitude. MOOCs are in line with the NEP's vision of integrating technology with content and pedagogy to make teaching learning as per requirements of 21st century India.

Challenges before MOOCs: A Quick View

It is equally important to take into account some barriers before successful implementation of MOOCs in Indian School Education. AICTE has considered language as a barrier in equity-based access to MOOCs for learners from rural areas (Pant, Lohani & Pande, 2021). Teachers also faced barriers during online teaching and assessments; lack of facilities, interruption of family during teaching, lack of institutional support for purchase of tools, lack of training, lack of technical support and lack of clarity and direction during Covid-19 (Joshi, Vinay, Bhaskar, 2020). The studies on assessment in MOOCs reveal that MOOCs lack assessment on psychomotor and affective levels of domains (Sandeen, 2013). Adhikari and Semalty (2021) studied SWAYAM platform and stated that many courses on SWAYAM lacked utilitarian aspect for learners and suggested more need based MOOCs and advocated the need of training for MOOCs developers for delivering the content on digital platform with pedagogical expertise. Murthy et al. (2018) discussed that more efforts should be put in designing, delivering and transacting the digital content for enhancing effectiveness and engagement in MOOCs. It will help in increasing the success rate of MOOCs in India. Long time back Kothari Commission (1964-66) and even now NEP (2020) also recommended 6 per cent of GDP for education. Different infrastructural limitations, issues of connectivity and technological support system can be overcome by going with and fulfilling this long wish of policy planners (p.186). Technological barriers, digital literacy and language also pose challenges in participation in MOOCs (Pouezevara & Horn, 2016). In developing countries like India, e-learning technology gives an opportunity to provide education to middle and lower income sections of society (Aggarwal, Sharma, Kumar.et al. 2021).

Potential in MOOCs: A Panacea for School Education

Recent years have endorsed the hike in enrollment in MOOCs by Indian students all over the world and India is the leading country in terms of enrollment in courses by most popular MOOCs providers like Coursera, Udacity, edX (Jyoti Chauhan, 2017). As per the research by Harvard and MITx in 2014, 10.5 million of Coursera students were from Indian origin and it made Indian students the second largest community of online learners. Powell and Yuan (2013) stated that MOOCs are open in terms of curriculum, learning pace and assessment process. MOOCs have the potential to address the challenge of accessibility by being accessible to everyone irrespective of the differences in learners in terms of culture, language, gender and religion. MOOCs also support the idea of lifelong learning as it equalizes the learning opportunities for the learners of all age levels (Bordoloi, Das & Das, 2020). MOOCs are proving to be bliss for those learners who have not been a part of the mainstream education system. This also bridges the gap which prevented many learners from accessing the educational system (Nayak, 2019). MOOCs have emerged as an innovative mode of teaching not only in

India but all over the world. On the basis of review trends and statistics on MOOCs, the tremendous hike in enrollment in MOOCs was seen in year 2020 with five times enrollment in Coursera courses and doubles the enrollment in edX courses if compared with 2019 enrollment (Shah, 2019). India is the 2nd biggest market for MOOCs in the world following US. India's population is second to China's and India is 3rd in term of university enrolment worldwide after US and China respectively. The demand for school education is increasing day by day which alone cannot be met by traditional structure of education. Only MOOCs are a ray of hope for those who could not join regular mode of study because of high fee, inflexibilities, and many other reasons.

During the pandemic period, India has witnessed a large number of ICT based initiatives on national, regional, state and individual levels and many such initiatives are there which contributed in making education accessible to learners in remote areas (Sharma, 2021). One of such initiatives is SWAYAM and the number of learners registered on it has also increased significantly in the last 2 years as a requirement to learn online in the period of covid-19. MOOCs have the potential to meet the learning needs of school (as well as university) students enrolled in regular and distance education. More than 3.85M students are enrolled in regular education and more than 4.28M students have opted for distance mode of education (AISHE, p. 22).

Discussion and Conclusion

The period following this pandemic is going to reshape Indian school education significantly. It is a call for mobilisation and participation of all the stakeholders in working for futures of school education. Education has a major role to play for India's fast growing and developing economy. In such a scenario, overcoming the barriers of access, equity, quality and relevance has become the dire need of the hour. NEP suggests development of digital infrastructure in terms of digital classrooms and remote expertise based teaching models to bridge gaps in face to face teaching and laboratory infrastructure, which is a big challenge because most of the institutions don't have adequate setup to support these tools (Venkateshwarlu, 2021). NEP 2020 recommended that e-courses or online courses should be made available in regional languages specifically in eight major Indian languages (Kurien & Chandramana, 2020). The Indian Government is to play a leading role in strengthening the backbone of e- learning by deploying adequate infrastructure at remote places where people lack access to the internet and devices (Tari & Amonkar, 2021).

A new hybrid model of education may emerge with significant advantages both for the teachers and learners. This move to online learning will become a catalyst for the development of new and more effective methods and pedagogy. It will be achieved if some research inputs from educational researchers are added to it. Researchers in the discipline of education may work for evolving pedagogy for online education or it can be the other way round like first we plan pedagogy and content then we select appropriate ICT platform for its delivery and transaction. The concept of the Technological Pedagogical Content Knowledge (TPACK) needs to be an integral part in training of teachers, and they must be trained to deliver content with appropriate pedagogy. For smooth and effective online education in India, low-cost internet facilities may be provided to people. Teachers need to be adequately trained to become effective online educators. A good offline teacher may not be an effective online teacher. In the era of industrial revolution 4.0 and for a professional teacher TPACK competency is required (Agustini, Santyasa & Ratminingsih, 2019). Content centric approach should be used in professional training of teachers. It advocates for teaching teachers how to teach the content by using adequate tools

and technology (Harris 2005, 2008; Mishra & Koehler,2007,2009; Niess, 2005). Online education must include experiential and activity based learning to include affective and psychomotor domain of learning (Panditrao & Panditrao, 2020). For the disadvantaged people for whom digital access is highly limited, the use of mass media like television, radio and community radio can be extensively utilized (Panditrao & Panditrao, 2020).

Development of digital content, delivery mechanisms and assessment systems with thoughtful integration of adequate technology with pedagogies may be fruitful and India can be a global MOOCs provider too. MOOCs have such features and capabilities which can be effective in reshaping Indian school education. MOOCs have the potential of removing barriers like poor infrastructural facilities, low access, inequality, high cost, discrimination and low quality education. Carefully designed MOOCs by experts and trained professionals may bring transformation in Indian education by overcoming the shortcomings of traditional setup. The existing and ongoing MOOCs can be critically reviewed by experts on some specific parameters. It is the right time for India to plan well and implement a robust mechanism for its school education which can overcome its challenges and barriers. Then equity-based access and quality education can be realised for 21stcentury India.

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Video-based Learning of the Concept of Plant Tissue Culture during Covid19 among Higher Secondary Students – An Empirical Study

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Abstract

Plant tissue culture has great significance in plant biotechnology,especially in crop improvement. Video may have a positive impact on student performance in biology classes, as they find it more engaging. Enormous studies have shown that video can be a highly effective educational tool. Over the past few years, videos are being widely used in classrooms for supporting a curriculum and helping students learn the material faster than ever. The objective of this study was to improve the academic achievement in the concept of 'Plant Tissue Culture' among the Class 12 students through Video content in three parts with different strategies.The single-group test-retest experiment design wasadopted for the study.The data were collected from Class 12 standard students of higher secondary school Thirunageswaram, Thiruvidaimarudur, Thanjavur, Tamil Nadu by the researcher for the study. The researcher took 17 (male 7 and female 10) as the sample size which was the total strength of the class 12 Biology stream.The magnitude of the difference between the pretest and posttest for achievement in 'Plant Tissue Culture' was estimated to be 2.893 through Cohen's d effect size analysis, which was found to be very large.Thus it was clear that the video lesson with interaction gave a nearly five times better result than without any interaction and discussion. When the video was played in the classroom at a stretch students performed four times better than the video given as a home assignment. This research study hasstrengthened the argument that video can be a highly effective educational tool.

Keywords: *Academic Achievement, Botany concept, Cohen's d effect size, Video-based learning at home assignment, Video sessions, Video with interaction*

Introduction

Video-based learning can be considered one of the effective teaching-learning methods. Students studying in standard 12 under Tamil Nadu State board in government schools are getting the laptops free of cost through their respective schools, which is a wonderful scheme from students' perspective to learn their subjects and compete globally in future endeavours. The TN government, School Education Department, and TN SCERT are jointly taking efforts to provide e-content in the form of videos so that they can learn through their laptops. During this Covid19 pandemic period schools were closed thus direct face-to-face teaching learning becomes impossible. These videos played a vital role in the learning of the students and that too at their own pace. Hence the investigator intends to witness the effect of such videos through a small study with the help of videos developed by the school education department, government of Tamil Nadu.

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The school education department has prepared enormous video lessons across subjects as learning resources for plus two students. As part of this initiative, video lessons were given to students as learning resources. Government and government-aided schools were instructed to transfer these video lessons to students' laptops through hi-tech labs in schools during the distribution of textbooks. Moreover, the State Council of Educational Research and Training (SCERT) and Kalvi TV have together prepared exhaustive video lessons in all the subjects for both the Tamil and English media. During the Covid 19 pandemic, not more than 20 students were asked to come to the school at any given point of time to get the video resources on their laptops. Since the schools in Tamil Nadu remain shut, the School Education Department has been taking steps to ensure that students have access to resources and can continue their learning.

Plant Tissue Culture

Plant tissue culture has great significance in plant biotechnology, especially in crop improvement. The term tissue culture may be defined as the process of the in-vitro culture of explants (pieces of living differentiated tissues) in a nutrient medium under aseptic conditions. However, in general, tissue culture includes the term tissue culture as well as cell culture, organ culture, and suspension culture. Plant tissue culture is a fundamental aspect of plant biotechnology. It is evident now that plant biotechnology is one of the most beneficial of all the sciences. The products of plant biotechnology are being transferred rapidly from laboratories to the fields. Also, the plant tissue culture has become of great interest to molecular biologists, plant breeders, and even industrialists, as it helps in improving plants of economic importance.

There were six videos developed for Chapter 5, Plant Tissue Culture. The whole lesson was covered using these 4 videos. The resource person in that video was Mr. K. Sirajudeen (as shown in Fig 1), Post Graduate Teacher from the Government Higher Secondary School, Suriyur, Pudukkottai District of Tamil Nadu. He used many PowerPoint slides in his explanations (as shown in Fig 2). Moreover, there were two more videos exclusively for the examination purpose, which covered book back and enriched questions so that the students can prepare for the competitive examinations. The digital video content production team has done wonderful work in presenting plant tissue culture to the anticipated learners.

Fig.1: Presenter of Video Lesson

Fig.2: Still from the Video Lesson

Review of Literature

Video may have a positive impact on student performance in biology classes, as they find it more engaging (Stockwell et al., 2015). As biology educators, we have abundant evidence that active learning like videos in

the classroom provides clear advantages over passive encounters with course material through lectures (Haak et al., 2011; Freeman et al., 2014). Schacter and Szpunar (2015) propose a conceptual framework for enhancing learning from educational videos that identifies online learning as a type of self-regulated learning. When new information is delivered via video, students report it as easier to learn and more memorable than text (Salomon, 2012; Choi & Johnson, 2005). Although much video-based education is still top-down and teacher-centered (Yousef et al., 2014; Kay, 2012) there is an increasing trend toward combining both teaching-focused and learning-focused methods (Kirkwood & Price, 2013). Video provides that opportunity for students to take fuller control over their learning. Poquet et al., (2018), emphasized the video characteristics that have been analyzed in research with specific regard to their influence on learning effectiveness. Student performances had a significant influence when integrating questions into videos (Obodo & Baskauf, 1995). On the other hand, video is not inherently effective, however; Guo et al., (2014) have shown that students often disregard large segments of educational videos. Some videos contribute little to student performance (Machardy & Pardos, 2015). Inspite of these arguments several research studies have shown that video can be a highly effective educational tool (Moore & Smith, 2012; Kay, 2012; Lloyd et al., 2012; Rackaway, 2012; Hsin & Cigas, 2013; Stockwell et al., 2015).

Need and Significance of the Study

Over the past few years, videos are being widely used in classrooms for supporting a curriculum and helping students learn the material faster. Research shows that most teachers have effectively used videos during the academic year and they have found video learning quite effective, it is even better than teaching students through traditional textbooks. The majority of part of the human brain is devoted to processing visual information. The brain responds to visuals fast, better than text or any other kind of learning material. Remembering stuff from the picture is retained in the mind for a longer time. Abstract concepts that are difficult to understand in any other way are learned by watching people perform or demonstrate the process through videos. This demonstration makes learning fast. Through videos, anybody can do self-study. The videos, audios, and webinars help students to learn something for which a teacher would be required otherwise. The best part is, this self-study technique leaves a powerful impact on the brain, better than reading the same lesson from a book.

Videos have now become a dominant part of classroom learning. They are widely used in both physical and online classrooms. As videos give the power to make a visual representation of the real world, this form of contextualization is incredibly useful in converting abstract theories into visuals. The students get to develop a connection between the knowledge that is being transferred and its practical implementation. Students get to learn through illustration. The visual analogy clarifies the concept better than any other thing. Video learning creates a sense of presence which supports cognitive as well as social presence. All these components are critical for successful learning. Lectures are conducted using video tutorials to make the learning process fun, effective, responsive, and fruitful.

Keeping the view of learning in the Covid-19 pandemic situation, digital video content is one of the best methods to learn and reach students. Standard 12 students have laptops issued by the government of Tamil Nadu in a free learning scheme. Many video contents were downloaded and transferred to the laptops through Hi-Tech labs by the school. There are resources on YouTube but most of the students cannot afford to have internet facilities. Moreover, in many villages, there is no internet facility at all or near the student's residence. As these standard 12 students are going for higher education it becomes very essential for them to have a clear idea about the concepts in their syllabus. Moreover, they must be ready to face many competitive

examinations. Hence the investigator decided to study the impact of such video content on learning among standard 12 students by taking the concept of plant tissue culture.

Objective of the Study

Improving the academic achievement in the concept of 'Plant Tissue Culture' among the Class 12 students through Video content in three parts with different strategies.

Hypothesis of the Study

In this study, the researcher used an alternative hypothesis instead of a null, which also contains three sub-hypotheses.

1) **Alternative Hypothesis (H1):** There is a significant mean difference between the pre-test and post-test scores of Class 12 students with respect to achievement test in the entire chapter on plant tissue culture.
   - **a) Sub-hypothesis (H1a):** There isa significant mean difference between the pre-test and post-test scores of Class 12 students with respect to achievement test 1 of part 1 of plant tissue culture using one time at a stretch video lesson in the classroom.
   - **b) Sub-hypothesis (H1b):** There is a significant mean difference between the pre-test and post-test scores of Class 12 students with respect to achievement test 2 of part 2 of plant tissue culture using the pause, rewind, and interaction with the video lesson.
   - **c) Sub-hypothesis (H1c):** There is a significant mean difference between the pre-test and post-test scores of Class12 students with respect to achievement test 3 of part 3 of plant tissue culture using a video lesson given as homework.

Sampling Size and Technique

The data were collected from Class 12 students of higher secondary school Thirunageswaram, Thiruvidaimarudur, Thanjavur, Tamil Nadu by the researcher for the study. The researcher took 17 (male 7 and female 10) as the sample size which was the total strength of the class 12 Tamil Medium Bio Math's stream. The technique adopted by an investigator for sampling was purposive as the availability of laptops among Class12 students, moreover convenience of the sampling was also considered.

Research Design and Intervention Applied

The single-group test-retest experiment design was adopted for the study. To determine the initial level of the student in Plant Tissue Culture, a pre-test (as shown in fig.3) was conducted on the students at beginning of the treatment through a paper pen test which comprises 45 MCQs in Tamil medium with four options.

Fig.3

Pre-test conduction

The intervention comprises of three levels. In the first level, Pre-test 1 comprised of 15 questions was administered, then part-1 video was exposed at a stretch with no discussion, and clarification (as shown in fig 4a and 4b), immediately after that Post-test 1 was administered.

Fig.4a

First Intervention

Fig.4b

First Intervention

On a successive day Pre-test 2 comprises 15 questions, part 2 video was exposed with interaction, discussion, pause, and replay of video portions, if required, by the students (fig 5a and 5b), immediately after that Post-test 2 was administered in intervention level 2. Then next day only Pre-test 3 comprised of 15 questions was administered. Video 3 (part 3) was written on DVD and was given to each individual for learning at home. In continuation the next day only Post-test 3 was administered as intervention level 3.

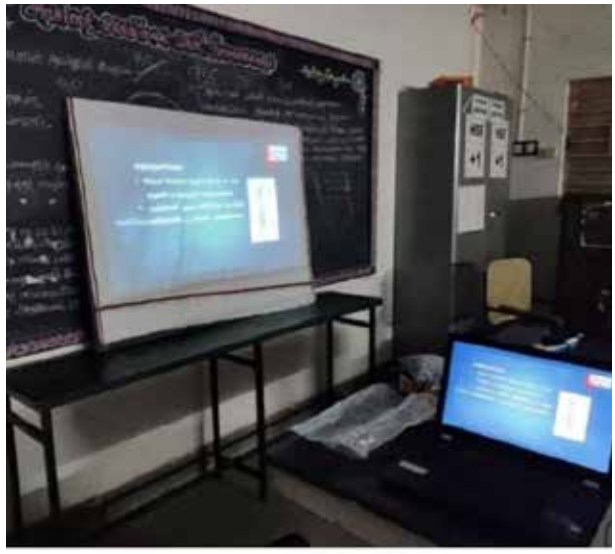
Finally, to understand the effects of video content a post-test was given to the students

Fig.5a

Second Intervention

Fig.5b

Second Intervention



at end of the treatment (as shown in fig 6), which was the same 45 MCQs used in the pretest.

The data obtained were subjected to the calculation of paired sample t-test through SPSS ver. 24 and Cohen's d effect size through the formula given below.

Cohen's d effect size=((M2 - M1))/((σ2 - σ1))

Fig.6

Post-test conduction

Where M1 is the mean of the pretest, M2 is the mean of the posttest, σ1 is the standard deviation of the pretest and σ2 is the standard deviation of the posttest. Cohen's d effect size is determined by calculating the mean difference between two groups, and then dividing the result by the difference between the standard deviation of the those two groups, if each group has a different standard deviation (Wasserman et al., 1988).

1) Alternative Hypothesis (H1)

Finally, the mean of the pre-test and post-test academic achievement scores are found to be 12.29 and 33.12 respectively. The t-value for the scores on the academic achievement for the pre-test and post-test was determined to be 14.06 which is found to be significant at 0.01 level for the df 16. Hence for the hypothesis (H1) there is a significant mean difference between the pre-test and post-test scores of Class 12 students with respect to achievement test in the entire chapter on plant tissue culture was accepted. The posttest score was found to be higher than the pretest of Class 12 in academic achievement in Plant Tissue Culture. The magnitude of the difference between the pretest and posttest for academic achievement in 'Plant Tissue Culture' was estimated to be 2.893 through Cohen's d effect size analysis, which was found to be very large (Sawilowsky, 2009).

a) Sub-Hypothesis (H1a)

The mean of the pre-test and post-test of achievement test 1 scores are found to be 3.59 and 11.47 respectively. The t-value for the scores on achievement test 1 for the pre-test and post-test was determined to be 14.94 which is found to be significant at 0.01 level for the df 16. Hence the sub-hypothesis (H1a) there is a significant mean difference between the pre-test and post-test scores of Class 12 students with respect to achievement test 1 of part 1 of plant tissue

Table 1

The Mean, Standard Deviation, Paired Sample t-value, and Cohen's d effect size were tabulated for different Pre-test and Post-test

Variable	n	Pre-test		Post-test		t - value	df	Level of Sig.	Cohen's d effect size
		Mean	S. D.	Mean	S. D.				
Achievement Test 1	17	3.59	1.18	11.47	1.91	14.94	16	0.001**	10.795
Achievement Test 2	17	4.24	2.02	12.35	2.18	13.54	16	0.001**	50.688
Achievement Test 3	17	3.65	1.17	8.88	3.18	7.12	16	0.001**	2.602
Academic Achievement	17	12.29	3.64	33.12	6.61	14.06	16	0.001**	7.013

Significant at 0.01 level

culture using one time at a stretch video lesson in the classroom was accepted. The post-test score was found to be higher than the pretest of Class 12 in achievement test 1. The magnitude of the difference between the pre-test and post-test for achievement test 1 in 'Plant Tissue Culture' was estimated to be 10.795 through Cohen's d effect size analysis, which was found to be very large (Sawilowsky, 2009).

(b) Sub-Hypothesis (H1b)

Similarly, the mean of the pretest and post test of achievement test 2 scores are found to be 4.24 and 12.35 respectively. The t-value for the scores on achievement test 2 for the pre-test and post-test was determined to be 13.54 which is found to be significant at 0.01 level for the df 16. Hence the sub-hypothesis (H1b) there is a significant mean difference between the pre-test and post-test scores of Class 12 students with respect to achievement test 2 of part 2 of plant tissue culture using the pause, rewind, and interaction with the video lesson was accepted. The post-test score was found to be higher than the pretest of Class 12 in achievement test 2.The magnitude of the difference between the pre-test and post-test for achievement test 2 in 'Plant Tissue Culture' was estimated to be 50.688 through Cohen's d effect size analysis, which was found to be very large (Sawilowsky, 2009).

c) Sub-Hypothesis (H1c)

Likewise, the mean of the pre-test and post-test of achievement test 3 scores are found to be 3.65 and 8.88 respectively. The t-value for the scores on achievement test 3 for the pre-test and post-test was determined to be 7.12 which is found to be significant at 0.01 level for the df 16. Hence the sub-hypothesis (H1c)there is a significant mean difference between the pre-test and post-test scores of Class 12 students with respect to achievement test 3 of part 3 of plant tissue culture using a video lesson given as home work was accepted. The post-test score was found to be higher than the pre-test of Class 12 in achievement test 3.The magnitude of the difference between the pretest and post-test for achievement test 3 in 'Plant Tissue Culture' was estimated to be 7.013 through Cohen's d effect size analysis, which was found to be very large (Sawilowsky, 2009). This research paper also indicates that in an experimental study it is useful to find out effect size, which is the magnitude of the effect rather than simply comparing the t-values between the pre-test and the post-test.

Findings and discussion

The magnitude of the difference between the pre-test and post-test for achievement in 'Plant Tissue Culture' was estimated to be 2.893 through Cohen's d effect size analysis, which was found to be very large (Sawilowsky, 2009).

Delimitations of the Study

The concept of Plant Tissue Culture given in the Class 12 book of Tamil Nadu State Board alone was taken for the study.

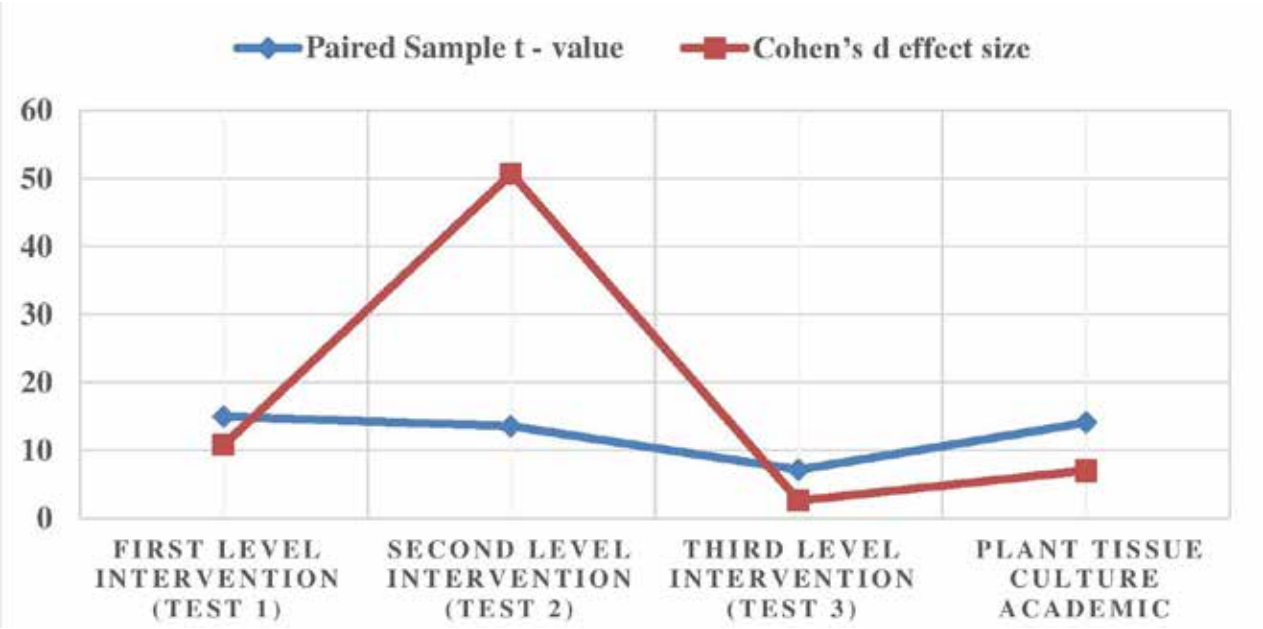
- Of three out of 6 available videos from YouTube,only 3 were taken for the study.
- The treatment is carried out only for 5 working days.

Conclusion

Videos of teachers with great experience and in-depth knowledge will be a boon for the students in preparing for their exams as well as academic competitions in near future. The government of Tamil Nadu has taken an effort to provide learning opportunities through the Kalvi TV channel with their best available resources, which the students and parents should realize and make use of this platform of learning especially for government students during this Covid19 pandemic situation. Extremely helpful for the preparation for

Fig. 7.

Line Graph showing t-value and Cohen's d effect size



the competitive exam like NEET. This video content will be provided by the school to students so that it can be well taken as the alternative for the online classes of the self-financing school. In the video mode of learning repetition, pause, and forward for self-paced learning can be done by the learner for a better understanding of the concept. Government should initiate this video into small meaningful episodes in the form of a learning management system like Byju's. Supplement materials can also be given like worksheets, bridge courses, etc.

In this study, the investigator used video content as the strategy for the experimental design. The video content prepared by the Government of Tamil Nadu in collaboration with Kalvi TV, SCERT, DIETs, School education department and given to the students through a laptop was taken for the study. The strategy has got a very positive impact on learning for Class 12 students. The students would have used this video content for their learning during this Covid 19 pandemic situation. Wonderful effort from the TN Government side in terms of creating a learning environment for the poor students studying in government schools. Now all in the hands of students to make them utilize their deeper learning and for future endeavours.

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Cooperative Learning Approach for enhancing Emotional Intelligence, Problem Solving Ability and Scientific Creativity among Secondary School Students

Jeena K G

Abstract

Cooperative learning approach helps to develop the skills of working together, sharing ideas and respecting the views of other students. This study aimed to examine the effectiveness of the cooperative learning approach on secondary school students' emotional intelligence, problem solving ability and scientific creativity. The experimental study design adopted for the study was post-test non-equivalent experimental control group design using a sample of 60 students. Statistical techniques used were descriptive statistics and inferential statistics through two-way ANOVA. The major findings revealed that the students, who learned through cooperative learning approach enhanced their emotional intelligence, problem-solving ability and scientific creativity. The results of the research motivate teachers to rethink their teaching strategies and redefine their approaches toward science teaching and learning. When scientific concepts are transacted through cooperative learning approach, the learning becomes joyful and it helps to attain the concept more clearly besides enhancing their creativity, leadership skills, cooperation, tolerance and overall achievement.

Keywords: *Cooperative Learning Approach, Emotional Intelligence, Problem Solving Ability,Scientific Creativity*

Introduction

Cooperative learning is a teaching method that involves students in the learning process and helps to understand content in a better way (Slavin, 2011). It's competence in terms of augmenting academic achievement has been proved by researchers (Mc Master & Fuchs, 2002; Johnson, Johnson & Stanne, 2000, Nichols, 2002, Winston, 2002). Cooperative learning also imbibes a positive attitude toward learning (Johnson & Johnson, 2008), it helps to improve social relations (Johnson & Johnson, 2005), in addition to high self-esteem and cohesiveness (Sahin, 2010). Cooperative learning can also be stated in terms of instructional strategy in which students work together to achieve learning target (Abrami, Poulsen & Chambers, 2004). It is also presented by Polloway, Patton and Serna (2001) that the cooperative learning method when used as a teaching activity, improves motivation, class participation and academic achievement of students. Cooperative learning promoted cooperation and working together in teams as researched by Robyn M. Gillies (2003). He studied the effects of cooperative learning on junior high school students during small group learning. The results show that the children in the structured groups were more willing to work with others on the assigned tasks and they provided more elaborate help and assistance to each other.

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Martinez L. Maria (2016) studied the use of Cooperative Learning for Assessing Students' Emotional Competences. Results revealed that cooperative learning allows students acquisition of competencies that are essential for the labour market such as leadership, critical thinking, communication, and so on. Joe Luca & Pina Tarricone (2011) investigated the influence of emotional intelligence on successful teamwork. There is a growing emphasis in tertiary education that students should develop professional skills as part of their education. Skills such as problem solving, communication, collaboration, interpersonal skills, social skills and time management are actively being targeted by prospective employers as essential requirements for employability, especially in team environments.

Cooperative learning is considered a promising approach to teaching-learning mathematics and it highly enhances mathematics achievement and problem solving (Capar and Tarim, 2015).

Cooperative learning is effective in performing better in Science subjects besides reducing stress and enhancing coping strategies among madrasa students (Shabana A, 2017).

Hanadi Chatila, and Fatima Al Husseiny (2017) conducted an experimental study to find out the effectiveness of the cooperative learning approach on students' acquisition and practice of scientific skills in Biology. A convenient sample was taken from two grades— 7 and 10. The pre and post tests were compared and the results revealed that the cooperative learning has a significant effect on Class X students' achievement in learning and practicing scientific skills, however, no significant effect was shown in the acquisition of new scientific skills for grade seven students .

Nina Klang and etal., (2021) researched the effectiveness of cooperative learning for Mathematical problem-solving and the result revealed that the cooperative learning approach enhanced the mathematical problem solving skills and social skills of students.

Cooperative Learning Approach

Cooperative learning is a learner-centred, teaching-learning strategy in which a small group of students is responsible for their learning and the learning of all group members. Students interact with each other in the same group to acquire and practice the elements of a subject matter to solve a problem, complete a task or achieve a goal (Li, M. P. & Lam, B. H, 2013). There are five important principles when we implement cooperative learning in the class room. They are Positive interdependence, Individual accountability, Face-to-face promotive interaction, Appropriate use of social, interpersonal, collaborative and small-group skills and Group processing.

Cooperative learning methods fall into 2 main categories (Li, M. P. & Lam, B. H, 2013)

1) Structured Team Learning

It involves rewards to teams based on the learning progress of their members, and they are also characterised by individual accountability, which means that team success depends on individual learning, not group products.

2) Informal Group Learning Methods

It covers methods more focused on social dynamics, projects, and discussion than on mastery of well-specified content

Emotional Intelligence

It was in the early 1990's John Mayer and Peter Salovey introduced the concept of emotional intelligence. They defined emotional intelligence as, "The ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to regulate emotions reflectively to promote emotional and intellectual growth". The credit for popularizing the term emotional intelligence goes to Daniel Goleman (1995), in his famous book 'Emotional Intelligence: Why It Can Matter More Than IQ'.

Emotional intelligence is "the ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" Salovey and Mayer (1990).

Problem solving ability

Thomas J. D'Zurilla in 1988 defined problem solving as a "cognitive-affective-behavioural process through which an individual (or group) attempts to identify, discover, or invent effective means of coping with problems encountered in everyday living" (Jerrold, R Brandell , 1997). This process includes problem finding or 'problem analysis', problem shaping, generating alternative strategies, implementation and verification of the selected solution. A distinguished feature of a problem is that there is a goal to be reached and how you get there depends upon problem orientation (problem-solving coping style and skills) and systematic analysis (Ian Robertson, 2001). Problem solving has been defined as a higher-order cognitive process and intellectual function that requires the modulation and control of more routine or fundamental skills (Goldstein & Levin, 1987).

There are two different dimensions of problem solving process mathematical problem solving and personal problem solving. There are many components which dependent on problem solving process. They are personal, motivational and contextual components. Researchers have focused on the role of emotions in problem solving (D'Zurilla & Goldfried, 1971; D'Zurilla & Nezu, 1982), demonstrating that poor emotional control can disrupt focus on the target task and impede problem resolution and likely lead to negative outcomes such as fatigue, depression, and inertia (Rath, Langenbahn, Simon, Sherr, & Diller, 2004).

Scientific Creativity

In 1962, Torrance has conceptualized 'Scientific Creativity' as a "process of becoming sensitive to problems related to science, deficiencies, gaps, missing elements, disharmonies, identifying the difficulty searching for solutions, testing and retesting of these hypotheses in science and possibly modifying and retesting them and finally communicating the results". According to Lacklen,scientific creativity is creative thinking through the media of science. It is a multidimensional attribute, differentially distributed among people and chiefly includes such factors as fluency, flexibility, originality and inquisitiveness (Lacklen, 1964).

Researcher formulated following objectives and hypotheses for the study.

Objectives

1. To study the effectiveness of cooperative learning approach on emotional intelligence of secondary school students.
2. To study the effectiveness of cooperative learning approach on problem solving ability of secondary school students.
3. To study the effectiveness of cooperative learning approach on scientific creativity of secondary school students.
4. To study the influence of approach of instruction, gender and their interaction on emotional intelligence of secondary school students.
5. To study the influence of approach of instruction, gender and their interaction on problem solving abilityof secondary school students.
6. To study the influence of approach of instruction, gender and their interaction on scientific creativity of secondary school students.

Hypothesis

1. There will be no significant difference between the cooperative learning approach and the conventional approach on emotional intelligence secondary school students.
2. There will be no significant difference between the cooperative learning approach and the conventional approach on problem solving ability of secondary school students.
3. There will be no significant difference between the cooperative learning

approach and the conventional approach on scientific creativity of secondary school students.

4. There will be no significant influence of approach of instruction, gender and their interaction on emotional intelligence of secondary school students.
5. There will be no significant influence of approach of instruction, gender and their interaction on problem solving ability of secondary school students.
6. There will be no significant influence of approach of instruction , gender and their interaction on scientific creativity of secondary school students.

Methodology

The study employed a quasi-experimental design in which two intact sections of Class IX were assigned to control and experimental conditions. The post-test non-equivalent experimental control group design was used for the study. The investigator selected the jigsaw technique from the various cooperative techniques for the development of the cooperative learning module since it is the suitable method for the topic to be taught.The investigator designed a module on the topic cell from science subject, effectively incorporating jigsaw techniques for the experimental phase of the study.

Tools

The tools used for collecting data were the following:

1. Cooperative learning module prepared by the Investigator
2. Emotional Intelligence Inventory
3. Problem solving Scale
4. Verbal test of Scientific Creativity

1. Cooperative learning module

The investigator developed a cooperative learning module using Jigsaw techniques in Science subject. The module is used for teaching students in the experimental group. In the Jigsaw method, students were assigned to a five-six-member team to work on academic material, broken down into sections, each team member learning their assigned section. Members of different teams who have studied the same sections meet in 'Expert groups' to discuss their sections.

Steps in Jigsaw learning

- The Teacher selects the topic and divides it into small sub topics
- The students are divided into small groups . This is known as the Master/ Jigsaw group.
- A leader was selected for each group.
- The teacher gives a subtopic to each member of the master group. The task was to learn the complete topic by combining all the subcomponents.
- Time was allotted to students to familiarise themselves with the task assigned.
- The students who got similar topic formed another group called Expert groups from the original Master group .
- Time was allotted to these expert groups to discuss the main points of their task and prepare a report/presentation based on the task.
- After completing the topic in the expert group, students came back to their respective Master groups.
- Students presented the topic and the teacher evaluated and gave necessary suggestions.

2. Emotional IntelligenceInventory

The emotional intelligence of students was measured by Mangal's Emotional Intelligence Inventory (MEII) which was standardised by Dr. S.K. Mangal and Mrs. Shubhra Mangal (Revised edition 2006). It contained 100 items under four dimensions —Intrapersonal Awareness, Interpersonal Awareness, Intra personal Management and Interpersonal Management with 25 questions in each dimension.

3. Problem solving scale

This tool was developed and standardized by the Research Institute for Problem Solving (RIPS), University of Minnesota, USA. The investigator translated it to Hindi and made some modifications appropriate to the Indian context. The Problem solving scale consisted of 16 items and the responses were distributed on 5 point scale continuum of Not at all, Rarely, Sometimes, Often and Very often.

4. Verbal test of Scientific Creativity

The Verbal test of scientific creativity developed by Sharma and Shukla (1985) was used for the study. It consisted of 12 items, which have been classified into four sub-tests namely (1) consequences test (2) unusual uses test (3) new relationship test and (4) just think why test. While scoring, each item is to be scored for fluency, flexibility and originality.

Data collection and Analysis

The investigator conducted the study in a government school of Bhopal. The sample constituted a total of 60 secondary school students. All the students are from the 9th grade. Investigator randomly assigned two sections of Class IX to the experimental and control groups. The experimental group was taught by the cooperative learning approach and control group was taught through the conventional approach for a period of 80 days. The investigator herself taught content in both groups to avoid discrepancies due to teacher variation. After the instruction, the post-tests – Mangal's Emotional Intelligence Inventory, Problem solving scale and Scientific creativity tests were administered to both groups and the scores were compared.

Statistical techniques used for the study

After tabulation of data, descriptive statistics, t test and One way ANOVA were employed using the SPSS version 16.

Results and Discussion

The data were analysed quantitatively based on the objectives and furnished under different headings.

Effect of Cooperative learning approach on Emotional intelligence

The scores of Emotional intelligence with t values and level of significance are represented in the Table 2.

Table 2

Effects of different approaches on Emotional Intelligence

S.No	Category	N	Mean	SD	Df	t -value	Significance
1	Experimental Group(Cooperative learning approach)	30	63.67	4.21	58	23.85	0.01 level
2	Control Group(Conventional approach)	30	38.27	4.03			

It is evident from Table 2 that the t value of 23.85 is significant at the 0.01 level, for the difference in the mean scores of Emotional intelligence of students of the experimental group and control group. Thus the null hypothesis is rejected. It can be said that the experimental group has an edge over the control group in Emotional Intelligence. So it is concluded that the Cooperative learning approach is effective in comparison to the Conventional approach in developing the Emotional intelligence of students. The results are in tune with Goreyshi, M.K, Kargar, F.R., Ajilchi,B (2013) where the researchers used Mastery cooperative learning for grade skipping and reported that a significant increase in emotional intelligence and self-esteem among students, taught through the cooperative learning approach.

Effect of Cooperative learning approach on Problem Solving Ability

Investigator tested the effectiveness of the Cooperative learning approach over the Conventional approach by comparing the experimental and control groups on the post test scores of Problem Solving Ability .The scores of Problem solving ability with t values and level of significance are represented in Table 3.

Table 3

Impact of different Approaches on Problem solving ability

S.No	Variable	Category	N	Mean	SD	Df	t -value	Significance
1	Problem Solving Ability	Experimental Group(Cooperative Learning Approach)	30	61.13	5.25	58	2.67	at 0.01 level
2		Control Group(Conventional Approach)	30	56.60	7.68			

Table 3 revealed that the t value of 2.67 is significant at the 0.01 level for the difference in the mean scores of Problem solving ability of students of the experimental group and control group. Thus the null hypothesis is rejected. It can be concluded that the Cooperative Learning approach is effective in comparison to the Conventional approach and the developed module is effective in developing Problem solving ability of students in the experimental group. The treatment with the Jigsaw learning technique of Cooperative learning helped the students of the experimental group to enhance their Problem solving ability. The Jigsaw learning method exposed the students' to different problem situations, and they developed the skills to solve the small challenges in Jigsaw learning, which helped to enhance the problem solving skills.

The results of the study are consistent with the study of Ungriana Trujillo-León, Raúl Delgado-Arenas , Shirley Delgado-Corazao, Nilda Corazao-Marroquín & Johnny Félix Farfán-Pimentel (2022). They reported that cooperative learning strategies influenced significantly the problem solving ability of students of secondary education. The results similar to the present study are obtained by researchers Patricia Heller, Ronald Keeth et.al. (1992), in that it is reported the cooperative learning improved the problem solving ability of students. The results of the present study are in tune with the study conducted by Roberta L. Dees (1991) where it is accounted that significant increase in problem solving ability of students taught through the cooperative learning approach.

Effect of Cooperative Learning Approach on Scientific creativity

The scores of Scientific creativity with t values and level of significance are represented in Table 4.

Table 4

Impact ofdifferent approaches on scientific creativity

S.No	Variable	Category	N	Mean	SD	Df	t -value	Significance
1	Scientific creativity Total Score	Experimental Group(Cooperative learning approach)	30	211.1	79.44	58	2.77	0.01 level
2		Control Group(Conventional Approach)	30	164.9	45.17			

It is evident from Table 4 that the t value of 2.77 is significant at 0.01 level for the difference in the mean scores of Scientific creativity of students of the experimental group and control group. The experimental group achieved a higher mean score (M= 211.1) than the control group (164.9) on scientific creativity after treatment. This revealed that the students exposed to the cooperative learning approach excelled over the students in the control group. It revealed that the experimental group was found to be superior to the control group in the scores of scientific creativity. In other words,cooperative learning approach is found to be more effective in enhancing the scientific creativity of students. Thus the null hypothesis is rejected and the cooperative learning approach is effective in comparison to the conventional approach in developing the scientific creativity of students in the experimental group.

These results are in tune with the research conducted by Paula Catarino, Paulo Vasco Jose Lopes, Helena Silva and Eva Morais (2019) where a quasi-experimental study was conducted to know the effectiveness of cooperative learning approach in enhancing creative thinking skills. The results showed that the cooperative method gives the students the possibility to improve more efficiently their thinking skills, working together than individually using only the conventional teaching method. These conclusions directed us to conclude that the cooperative method is a valid method and that the intervention was effective in improving higher education students' creative skills.

Multivariate Analysis

Influence of Approach of instruction,gender and their interaction on emotional intelligence

Investigator analysed the influence of approach and gender and their interaction on the Emotional intelligence of secondary school students using ANOVA. The data and results were presented in Table 5.

Table 5

Summary of 2X2 Factorial Design ANOVA of Emotional intelligence with respect to Gender and Approach of Instruction

Source of Variance	SS	Df	MSS	F	Significance
Approach	367.357	1	367.357	10.214	0.01level
Gender	422.167	1	422.167	11.738	0.01level
Approach*Gender	85.824	1	85.824	2.386	Not significant
Error	2014.009	56	35.964		
Total	163862.000	60			

Table 5 showed that the F value for the approach of instruction on Emotional intelligence is 10.214 which is significant at 0.01 level. It means that there is a significant influence of the approach of instruction on the emotional intelligence of the sample. From the table, it can be seen that the F value for gender is 11.738 which is significant at the 0.01 level with df =1/56. It means that the mean scores of emotional intelligence of boys and girls of secondary school differ significantly. So, there is a significant influence of gender on the emotional intelligence of the sample. The 'F' value for the influence of the interaction effect of approach and gender on the emotional intelligence of the sample is 2.386 which is not significant. It reveals that there exists no significant influence of the interaction effect of approach and gender on the emotional intelligence of secondary school students.

The present study showed that there is a significant influence of approach of instruction and gender on emotional intelligence and the null hypothesis is rejected. But the interaction effect of the approach of instruction and gender was not significant and the null hypothesis is accepted.

The results of the present study are in compliance with the research done by Maryam Meshkat and Reza Nejati (2017) where the researchers found that no significant influence of gender on overall scores of emotional intelligence.

The influence of gender on emotional intelligence was researched by researchers all over the world and gave dissimilar results . Some studies showed preference to females over males in emotional intelligence scores as evident from the national level researches (Chandra, Gayatri, & Devi, 2017), females have higher emotional intelligence than males by international level researches (Ranasinghe, Wathurapatha, Mathangasinghe, &Ponnamperuma, 2017), Domakani, Mirzaei, and Zeraatpisheh (2014). Craig et al., 2009; Harrod & Scheer, 2005; Petrides & Furnham, 2000). A study conducted in secondary schools students showed that girls demonstrated higher emotional intelligence scores than boys (Joshi & Dutta, 2014), But the study of Zohrevand (2010) gave contrary results stating that males scored higher on emotional intelligence than their counter parts.

However many researches done in various parts of the world are consistent with the results of the present study where they observed gender does not have significant influence on emotional intelligence scores (Aquino, 2003; Bar-On, 1997; Bar-On, Brown, Kirkcaldy, & Thome, 2000; Brackett & Mayer, 2003; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Brown & Schutte, 2006; Depape, Hakim Larson, Voelker, Page, & Jackson, 2006, Arteche, Chamorro-Premuzic, Furnham, and Crump (2008) .

Influence of Approach of instruction, Gender and their Interaction on Problem solving Ability

Investigator analysed the influence of approach of instruction, gender and their interaction effect on problem solving ability of secondary school students using ANOVA. The data and results were presented in Table 6.

Table 6 showed that the F value for the approach of instruction on problem solving ability of secondary school students is 6.664 which is significant at 0.01 level. It means that there is a significant influence of the approach of instruction on problem solving ability of the sample and the null hypothesis is rejected. From the table, it can be seen that the F value for the influence of gender on problem solving ability of secondary school students is 0.247 which is not significant with df =1/56. It means that the mean scores of problem solving ability of boys and girls of secondary school do not differ significantly and the null hypothesis is accepted. So, there is no significant influence of gender on problem solving ability of the sample. The 'F' value for the influence of the interaction of approach and Gender on problem solving ability of the sample is 0.768 which is not significant. It reveals that there exists no

significant influence of the interaction effect of approach and gender on problem solving ability of secondary school students and the null hypothesis is accepted. These results of the study are in coincidence with researchers in the past, Ajai and Imoko (2015), Sebastian 2017) where the researchers observed that the gender have no significant bearing on the problem solving ability of the secondary students

These results of present research were consistent with the study conducted by Kartini Nisa, Dwi Sulisworo (2019) where the researchers used the quasi experimental research with factorial 2X3 designs to know the influence of cooperative learning model and learning style on problem-solving ability of tenth-grade students. The result of the descriptive analysis shows that the average and gain a score of the problem-solving ability of students who were taught through cooperative learning model of STAD (student teams achievement division) type was significantly higher than the control group.

The results of the present study were contrary to some of the researches done in the past where the researchers reported that males possess more problem solving ability than the females Becker and Forsyth (1994), Astur, Purton, Zaniewski, Cimadevilla and Markus (2016) and Mefoh, Nwoke, Chukwuorji and Chijioke (2017) while the study of Cakir (2017) was in favour of females, reported that females are superior to males in problem solving ability.

Table 6

Summary of 2X2 Factorial Design ANOVA of Problem solving ability with respect to Gender and Approach of Instruction

Source of Variance	SS	Df	MSS	F	Significance
Approach	293.467	1	293.467	6.664	0.01level
Gender	10.857	1	10.857	.247	Not significant
Approach*Gender	33.800	1	33.800	.768	Not significant
Error	2466.009	56	44.036		
Total	163862.000	60			

Influence of Approach of instruction, Gender and their interaction on Scientific creativity

The investigator analysed the influence of approach of instruction, gender and their interaction on scientific creativity of secondary school students using ANOVA. The data and results were presented in Table 7.

Table 7

Summary of 2X2 Factorial Design ANOVA of Scientific creativity with respect to Gender and Approach of Instruction

Source of Variance	SS	Df	MSS	F	Significance
Approach	30836.9	1	30836.9	9.254	0.01level
Gender	53640.067	1	53640.067	16.096	0.01level
Approach*Gender	1930.717	1	1930.717	.597	Not significant
Error	186616.616	56	3332.440		
Total	2394844.000	60			

Table 7 showed that the F value for the influence of approach of instruction on scientific creativity is 9.24 which is significant at 0.01 level. It means that there is a significant influence of the approach of instruction on the scientific creativity of the sample.From the table, it can be seen that the F value for the influence of gender on scientific creativity is 16.096 which is significant at the 0.01 level with df =1/56. It means that the mean scores of scientific creativity of gender of secondary school differ significantly. So, there is a significant influence of gender on the scientific creativity of sample. The 'F' value for the influence of the interaction effect of approach of instruction and gender on the scientific creativity of sample is .597 which is not significant. It reveals that there exists no significant influence of the interaction effect of approach of instruction and gender on the scientific creativity of secondary school students.

The present study showed that there is a significant influence of approach of instruction and gender on scientific creativity and hence the null hypothesis is rejected. But the interaction effect of the approach of instruction and gender on scientific creativity was not significant and the null hypothesis accepted.

The researches in the area of scientific creativity yielded different results. Some research are in conformity with both gender (Runco & Okuda, 1988; Runco & Smith, 1992; Lee, 2002; Harris, 2004; Charyton, 2005) reported both genders are equal in their creativity in other words gender does not have significant effect on student creativity (Kaufman, 2006; Kaufman et al., 2010; Mori, 2014; Gunawan et al., 2017; Fadllan et al., 2018)., while other researches are in favour of either of one gender such as females are better in Scientific creativity than males (Shin et al.,2002 ., Vergara et al., 2018) or males are superior to females in Scientific creativity (Conti et al., 2001; Okere&Ndeke, 2012; Yuan Z et al., 2017 Karwowski et al., 2016; Zhang et al., 2018; He, 2018; He, 2021).

The present study pointed toward the fact that cooperative learning is highly effective in enhancing emotional intelligence, self-esteem and scientific creativity among the students. These results of the present study are consistent with researches already done on the effectiveness of cooperative learning approach on different psychological and other variables such as effects of cooperative learning on enhancing academic achievement and psychological variables, i.e. Cohen (1994); Shachar & Sharan (1994); Sharan (1980, 1990); Sharan & Sharan (1992); Slavin (1983); Johnson & Johnson (2002); Foley & O`Donnell (2002); Nichols & Miller (1994); Sherman (1994); Yager & Tamir (1993); Tokinan, & Bilen (2010); Orth, Trzasniewski & Robins (2010); Yazici, Seyis & Altun (2011).

Educational implications and Conclusion

The study has wide implications in the educational sector. The findings of the study can be used by educators to make a revolutionary change in all realms of teaching-learning process. Today our world is facing social evils like, communal disharmony leading to communal riots. So it is our responsibility to inculcate the values among them to live together and the cooperative learning approach develop the skills like cooperation, teamwork, sharing ideas, tolerance, etc., among students. Cooperative learning develops high-order thinking skills, enhances motivation and improves interpersonal relations as well as enhances motivation and peer relations (Slavin, 1985). The results of the study will make the teachers rethink their strategies and motivate them to adopt cooperative learning strategies for the transaction of curriculum. Most important is that cooperative learning exploits the diversified abilities of students to increase their cognitive, psychological and social performance, and as such, it is an effective way to address the problem of individual differences. So the cooperative

learning approach helps to develop various skills among students like cooperation, team spirit, leadership qualities, helping and working to attain common goals, etc., which will eventually lead them to develop the values to become sensible citizens.

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Sociometric Status at Classroom's Context: Role of Emotional Intelligence

*Proloyendu Bhoumick**

Abstract

Emotional Intelligence refers to the ability to identify, understand, manage, and effectively use one's own emotions and emotions of others. It helps the students to be better performers in school, team activities, and conflict resolutions and many more. On the other hand, sociometric status of a student is determined by the extent to which they are liked or disliked by the peers. The present study has shed light on the association between the levels of Emotional Intelligence (High, Average, and Low) of the students and their Sociometric statuses (Preferred, Rejected, Neglected, Controversial and Average) in the classroom's context. A total of 178 students of Class IX from 4 conveniently selected classrooms participated in this study. They completed the 'BASPBEIT-Emotional Intelligence test' first before they gave the three names of the peers from their respective classrooms "whom they liked most" and "whom they liked least" in a blank sheet. A chi-square test of independence was used to examine this association. A "low to moderate"association was found between the Emotional Intelligence and Sociometric Status. Results also revealed that the sociometrically Preferred students have High Level of Emotional Intelligence in comparison with the students of other sociometric statuses. The sociometrically Rejected students have Low level of Emotional Intelligence. Sociometrically Neglected students are more associated with the Average Level of Emotional Intelligence. The other two sociometric statuses are not significantly associated with any levels of Emotional Intelligence.

Keywords: *Emotional Intelligence, Sociometric Status, Preferred, Rejected, Neglected, Controversial.*

INTRODUCTION

According to J. D. Mayer & P. Salovey (1997), the Emotional Intelligence (EI) is "the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth". It is the constellation of four abilities. These abilities are, 'Perceiving Emotions' (PE), 'Using Emotion to Facilitate Thoughts' (UF),'Understanding Emotions' (UE), and 'Managing Emotions' (ME).

i) Perceiving Emotions(PE) is the ability to identify one's own emotions and emotions of others through observing faces, body languages, vocal intonations etc.

ii) Using Emotion to Facilitate Thoughts (UF) is the ability to associate the emotion with body sensations such as, 'lump in the throat, 'breathing changes', 'stomach sensations', 'feeling cold', 'feeling warm', 'heart beats faster', 'sweating', 'goose flesh', 'blushing' etc. It is also the ability to generate and employ emotion in the process of thinking and decision-making.

iii) Understanding Emotions (UE) is the ability to understand complex

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emotions in blended form (e.g., blended emotion 'contempt' is the mixture of the emotions Joy and Trust; Plutchik, 2001). It is also the ability to understand how emotions get transition from one stage to another (e.g. stages of transition of the emotion 'anger' from lower intensity to the higher intensity are Annoyance, Anger and Rage; Plutchik, 2001).

iv) Managing Emotions (ME) is the ability to manage or regulateone's own emotions and emotions of others.

The emotionally intelligent adolescents show better academic achievement and greater physical & psychological well-being. They also show better performance in team appropriate activities and conflict resolutions (Reyes et.al, 2012).

Human emotions play a significant role in the quality of the relationship we are making in our life. Today, our education system is giving more emphasis on the constructivist approach of learning, where students construct knowledge from their prior knowledge through the active collaboration and discussion with their peers (NCF-2005; NCERT, 2005). A good relationship is very essential for any kind of collaboration. A good relationship with the teachers and peers makes a healthy, positive classroom climate. It also fosters student engagement in study. Engaged students are more likely to exert effort in classroom activity, exhibit interest and motivation in study (Fredricks, Blumenfeld, & Paris, 2004). The students who are not engaged in the classroom, they become disruptive, and their aspirations become low. These students show lower grades in exams and are likely to be dropped out (Kaplan, Peck, & Kaplan, 1997).

In our schools, many students are not feeling connected. They feel unwelcomed, disconnected and lost in the schools (McNulty & Quaglia, 2007). Their lack of active participation and disengagement is one of the main reasons for this massive dropout. According to Social neuroscience, when two people interact with one another, the emotional centers in their brains make an influence on each other. It can have both positive and negative influences (Cacioppo & Berntson, 2005; Goleman, 2006; Cacioppo, Berntson, & Decety, 2010). So, the student's state of emotion has a great effect on the teacher's state of emotion and vice-versa. This state of emotion can make a healthy relationship with their teachers and peers. It helps the students to be attentive, engaged, and better performers in their academic and social life. The capability of awareness and regulation of the emotions of oneself and others are the key factors that influence the quality of interactions. Research revealed that quality social interactions influence human performance in every area of life (Salovey, Bedell, Detweiler & Mayer, 2000; Salovey & Mayer, 1990; Van der zee, Schakel & Thijs, 2002).

So, the emotional intelligence of the students may have some influence on their different relationships, especially with their peers. More emotionally intelligent students have greater emotional and social skills, so they may have a higher acceptance in the peer groups, which leads to different sociometric status.

Sociometric status

The sociometric status refers to the relative position that a person holds within a group in comparison to the other group members. This concept was first proposed by J L Moreno back in 1934. The sociometric status can be measured through the sociometric questionnaire, where each group members are asked to indicate the names of other members of that group to whom they like most and those to whom they like least (peer nominations). The liking and disliking are used to examine the relationship of acceptance or rejections according to the sociometric criteria (Poulin and Dishion, 2008; Cillessen, 2009; Hymel et al., 2010). There are different criteria which can be used at sociometric tests (e.g.; name of the person with whom you would like to participate in

an activity/ whom you like most etc.). These criteria must be logical and relevant to daily life experience of the individual or the group. Members of the group must know and spend some time with each other. Sociometry has been used to study the group dynamics. According to Cillessen and Bukowski (2000), in the sociometric technique the two dimensions of peer's nominations have been used in the various studies. These dimensions are (i) Positive Nominations Received (liked most) and (ii) Negative Nominations Received (liked least) by an individual. They also pointed out two independent composite dimensions, such as 'Social Preference' and 'Social Impact'. The Social Preference (SP) is measured by the number of the Positive Nominations Received (liked most) minus the Negative Nominations Received (liked least) by an individual. The Social Impact (SI) of an individual is measured by the number of Positive Nominations Received (liked most) plus the Negative Nominations Received (liked least). Based on these four parameters such as, number of 'Positive Nominations Received' (PNR) and 'Negative Nominations Received'(NNR), Social Preference (SP) and Social Impact (SI), each student is classified into five different sociometric statuses (Coie et al., 1982) such as,

i) ***Preferred:*** The preferred students are those who received more PNR than the average PNR of all the students in a particular classroom. In addition to that, these students received less NNR than the average NNR in the same classroom. The preferred students have a good amount of Social Preference (SP) with respect to their peers.

ii) ***Rejected:*** The rejected students are those who received more NNR than the average NNR by all the students in a particular classroom. In addition to that, these students received less PNR than the average PNR in the same classroom. The rejected students have a less amount of Social Preference (SP) with respect to their peers.

iii) ***Neglected:*** Neglected students are not liked or disliked by their peers. So, they received a very low amount of positive as well as negative nomination (both PNR & NNR) from their peers. The neglected students have a very low Social Impact (SI) among their peers.

iv) ***Controversial:*** The controversial students are those who received more PNR & NNR both than the average PNR & NNR by all the students in a particular classroom. The controversial students have a good amount of Social Impact (SI) among their peers.

v) ***Average:*** The average students have an average amount of Social Impact (SI) as well as the Social Preference (SP) with respect to their peers.

Rationale of the study

Numerous studies found that the sociometrically rejected children have delinquent behavior. They have lesser skills of social functioning and poor emotional regulation abilities (e.g. Asher and Coie, 1990). Sociometrically preferred children have been found highly competent as far as their social functioning is concerned (e.g. Rubin, Bukowski & Parker, 1998). On the other hand, the abilities of Emotional Intelligence enable the students to act wisely in human relations in the society as well as in classroom. The Emotional Intelligence is strongly related to social adjustment (Engelberg & Sjoberg, 2004). The skills of Social adjustment enhance the ability to monitor and regulate one's own emotions as well as the emotions of the persons who are in the same social groups. These findings also revealed that the abilities of Emotional Intelligence are essential for social adjustment and developing friendships. The social status in the peer group predicts youths' future adjustment (e.g., Van Noorden, Cillessen, Haselager, Lansu, & Bukowski, 2017).These skills of social functioning, social adjustment and developing friendships can contribute

to greater sociometric status. So, emotional intelligence may have influence on the sociometric status of the students. In a study conducted on the elementary school children at Andhra Pradesh, India, shows that the Emotional Intelligence positively influences the sociometric scores of the elementary children (Sujeevanamma and Anuradha, 2015). But this kind of study is very rare in the academic literature, especially for the students of West Bengal. So, the present paper is intended to fill this knowledge gap.

Hypothesis

The abilities of EI enable students to act wisely in human relations in the society as well as in the classroom. So, emotional intelligence influences the Sociometric status of the adolescents. Starting from this general idea, the following hypothesis is formulated and tested accordingly.

H0: The levels of Emotional Intelligence (High, Low and Average) of the adolescent students are not significantly associated with any five types of Sociometric status(Preferred, Rejected, Neglected, Controversial and Average).

Method: Participants: A total of 178 adolescent students of Class IX from 4 conveniently selected classrooms (Section/ unit) are the participants of this study.These students are chosen from two Government Sponsored schools in the District of North 24 Parganas, West Bengal. Among them, 99 are boys (55.61%) and 79 are girls (44.39%) having the mean age of 15.29 years (SD= 0.43 years).

Tools: BASPBEIT: 'Bhoumick and Saha Performance Based Emotional Intelligence Test (BASPBEIT)', developed by the present researcher is used to assess the Emotional Intelligence of the adolescent students. It comprises 8 Task, 28 stimuli, with 59 items measuring four branches of ability of emotional intelligence, i.e. Perceiving Emotions (PE), Using Emotion to Facilitate Thoughts (UF), Understanding Emotions (UE) and Managing Emotions (ME). Average score of all the four branches provides the Emotional Intelligence (EI) score. It is standardised on 608 adolescent students of West Bengal with an age range 13 to 19. The test retest Reliability of this test is 0.71. The internal consistency of the current study showed the Cronbach alpha value (α) 0.82. Score of this test is presented through STEN scores (M=5.5 and SD=2)with a range of 0 to 10.

Sociometric Nominations Questionnaire: The students are asked to write the three names of the peers in their respective classroom "whom they like most" and write three names "whom they like least". According to Cillessen (2009), these two items have shown good test-retest reliability in different studies. It is relatively easy to understand for the students as well as easy to implement (Gommans and Cillessen, 2015).

Scoring Scheme of Sociometric Nominations Questionnaire

Each student of a particular classroom provides six names of their peers (3 that they like most i.e., Positive Nominations and 3 that they dislike most i.e., Negative Nominations).

Based on the sociometric nominations of all the students, each student is assigned with a pair of raw sociometric Nominations scores. One score is the number of positive nominations received (PNR) i.e. number of peers who like that particular student. Another is the number of negative nominations received (NNR) i.e. number of peers who dislike that particular student. Each student is characterized by his/her pair of sociometric scores (PNR & NNR).

Let's assume we have students named as Rahul, Puja, Anwar, Shyam, Ronita, Lily, and James in a particular classroom. The sociometric nominations provided by Rahul, Puja, and Anwarare as follows:

i. Rahul's Sociometric Nominations:
Positive/Liked Nominations: Puja, Anwar, Shyam
Negative/Disliked Nominations: James, Lily, Ronita

ii. Puja's Sociometric Nominations:
Positive/Liked Nominations: Anwar, Shyam, James
Negative/Disliked Nominations: Lily, Ronita, Rahul

iii. Anwar's Sociometric Nominations:
Positive/Liked Nominations: Puja, Rahul, Shyam
Negative/Disliked Nominations: Ronita, James, Lily

Based on these nominations, the raw sociometric nomination scores for each student can be calculated:

Rahul:
Positive Nominations Received (PNR): 1
Negative Nominations Received (NNR): 1
Puja:
Positive Nominations Received (PNR): 2
Negative Nominations Received (NNR): 0
James:
Positive Nominations Received (PNR): 1
Negative Nominations Received (NNR): 2
Ronita:
Positive Nominations Received (PNR): 0
Negative Nominations Received (NNR): 3

These scores are the raw count of PNR and NNR received by each student.

To determine the sociometric status of a particular student, the standard score method of Sociometry (Coie et al., 1982) is used in this study. In this method, the raw numbers of PNR and NNR for each student of a particular classroom were calculated first. Then Standard scores of PNR (Z_{PNR}) and NNR (Z_{NNR}) for each student were calculated through the formula given below.

$$Z_{PNR} = (PNR-MPNR)/S.DPNR$$

Where, M_{PNR}= Mean of PNR for a particular classroom, $S.D_{PNR}$= Standard Deviation of PNR for a particular classroom.

$$Z_{NNR} = (NNR-MNNR)/S.DNNR$$

Where, M_{NNR}= Mean of NNR for a particular classroom, $S.D_{NNR}$= Standard Deviation of NNR for a particular classroom.

In the second stage, the Social Impact (SI) and Social Preference (SP) of a particular student are calculated using these formulas.

Social Impact, $SI = Z_{PNR} + Z_{NNR}$

Social Preference, $SP = Z_{PNR} - Z_{NNR}$

Then Standard scores of SI (Z_{SI}) and SP (Z_{SP}) for each student were calculated through the formula given below.

$$ZSI = (SI-M_{SI})/S.D_{SI}$$

Where, M_{SI}= Mean of SI for a particular classroom, $S.D_{SI}$= Standard Deviation of SI for a particular classroom.

$$Z_{SP} = (SP-M_{SP})/S.D_{SP}$$

Where, M_{SP}= Mean of SP for a particular classroom, $S.D_{SP}$= Standard Deviation of SP for a particular classroom.

Based on these four parameters such as, Z_{PNR}, Z_{NNR}, Z_{SI} and Z_{SP}, and the criteria given below, each student had been classified into five different sociometric statuses.

Criteria to determine the Sociometry Status: (modified version of standard score method; Coie & Dodge, 1983):

i. Preferred: $Z_{SP} > 1$, $Z_{PNR} > 0$, $Z_{NNR} < 0$.
ii. Rejected: $Z_{SP} < -1$, $Z_{PNR} < 0$, $Z_{NNR} > 0$.
iii. Neglected: $Z_{SI} < -1$, $Z_{PNR} < 0$, $Z_{NNR} < 0$.
iv. Controversial: $Z_{SI} > 1$, $Z_{PNR} > 0$, $Z_{NNR} > 0$.
v. Average: $-0.5 < Z_{SP} < +0.5$ and $-0.5 < Z_{SI} < +0.5$

Procedure

After getting the necessary permission from the concerned authorities, the present researcher visits each classroom and collects data manually. The data collected from those students who were present at the classroom on the date when the researcher visited that particular school. Participants first completed the 'BASPBEIT-Emotional Intelligence test' through paper-pencil mode. Then, they completed the Sociometric Nominations Questionnaire. They were requested to response both of the tools independently and without collaboration. Confidentiality of the data is ensured.

Results

The calculated value of mean and the SD of the Emotional Intelligence score were 0.414 and 0.038 respectively. Based on these values, each scores of EI were converted into the Standard Ten (STEN; Mean=5.5 and SD=2) score. The STEN score indicates an individual's approximate position regarding the others in the population. The raw scores (x) of EI of each individual were converted to the 'STEN score' by using the formula; St = [{(x -M)/SD} * 2] + 5.5.

Table 1

Descriptive Statistics (N= 178)

	N	Range	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
EI Emotional Intelligence	178	.19	.3	.49	.414	.0016	.0381

After computation of the test scores, all the students are classified into three levels of Emotional Intelligence based on the Mean (M=5.5) and Standard Deviation (SD=2). These three levels are,

i. High level of Emotional Intelligence[scored greater than 7.5 (M+1SD)]
ii. Low level of Emotional Intelligence[scored less than 3.5 (M-1SD)]
iii. Averagelevel of Emotional Intelligence [scored between 3.5 (M-1SD) and 7.5 (M+1SD)].

The group of 'Average level' of Emotional Intelligence consists of 84 adolescents (51 Males and 33 Females) with score range 3.6 to 7.49. The group of 'High level' of Emotional Intelligence comprises 56 adolescents (33 Males and 23 Females) with score range 7.58 to 8.91. The group of 'Low level' of Emotional Intelligence comprises 38 adolescents (15 Male and 23 Female) with score range 1.6 to 3.42 at BASPBEIT emotional intelligence test.

The Chi-Square Tests

A chi-square test of independence (see Table 2) examined the association between the levels of Emotional Intelligence and Sociometric status.

The result of Pearson Chi-Square test is statistically significant with x^2 (1, N=178)= 52.188, p<.00001. In this test the p-value is .00001, which is less than α, i.e., .05, hence null hypothesis (H0) is rejected. Hence, it can be inferred that there must be a statistical significant association exist between the Emotional Intelligence and sociometric status.

The Cramer's V Coefficient of .383, indicating a "low to moderate" relationship between these two constructs.

Table 2

Chi-Square Tests for EI and Sociometric status

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	52.188a	8	.00001
Likelihood Ratio	48.131	8	.00005
N of Valid Cases	178		

a. 2 cells (13.3%) have expected count less than 5. The minimum expected count is 2.56.

The Post-hoc test with Adjusted Residual

To find the statistical significance of all the possible combination of levels of Emotional Intelligence and different Sociometric statuses, a Post-hoc test with adjusted residuals and adjusted p-value is conducted further (see Table 3). 'Post-hoc test with Adjusted Residual' is used to analyze the association between two categorical variables. It helps to find which specific combinations of categories have a significant association.

Results of any statistical test in social sciences can be declared as significant, if the p-value is less than α=.05. But in the case of Post-hoc test with adjusted residuals, the value of adjusted Alfa for all the combinations of case should be considered (Bonferroni's correction).

Adjusted Alfa =(p-value)/(Number of possible combinations)

- Here, accepted p-value of social science = 0.5
- Number of possible combinations = (Number of category of EI) X (Number of category of sociometric status)
- Number of category of EI= 3 (Average, High and Low)
- Number of category of Sociometric Status = 5 (Preferred, Rejected, Neglected, Controversial and Average)

So, the value of Adjusted Alfa in this case is, α=.05/(3x5)=.05/15=.0033.

In this case, if obtained p-value is less than .0033 at 'Post-hoc test with Adjusted Residual' for a specific combination of the categories, then the association between those two categories is statistically significant.

Table 3

(5X3) Group Cross Tabulation with Post-hoc test with Adjusted Residual

Sociometric Status		Emotional Intelligence (EI)			Total
		Average	High	Low	
	p value (Sig.)	.0001*	.0244	.0297	
Preferred	Count	5	4	3	12
	Expected Count	5.7	3.8	2.6	12.0
	% within Sociometric Status	41.7%	33.3%	25.0%	100.0%
	Adjusted Residual	-.4	.1	.3	
	p value (Sig.)	.6914	.8850	.7492	
Rejected	Count	9	6	14	29
	Expected Count	13.7	9.1	6.2	29.0
	% within Sociometric Status	31.0%	20.7%	48.3%	100.0%
	Adjusted Residual	-1.9	-1.4	3.9	
	p value (Sig.)	.0568	.1722	.0001*	
Neglected	Count	40	12	7	59
	Expected Count	27.8	18.6	12.6	59.0
	% within Sociometric Status	67.8%	20.3%	11.9%	100.0%
	Adjusted Residual	3.9	-2.2	-2.2	
	p value (Sig.)	.0001*	.0244	.0297	
Controversial	Count	5	4	3	12
	Expected Count	5.7	3.8	2.6	12.0
	% within Sociometric Status	41.7%	33.3%	25.0%	100.0%
	Adjusted Residual	-.4	.1	.3	
	p value (Sig.)	.6914	.8850	.7492	

Average	Count	21	7	11	39
	Expected Count	18.4	12.3	8.3	39.0
	% within Sociometric Status	53.8%	17.9%	28.2%	100.0%
	Adjusted Residual	.9	-2.1	1.2	
	p value (Sig.)	.3461	.0397	.2370	

The result of the Post-hoc test reveals that, at the combination of "Preferred sociometric status" and "High level of EI", the p-value is .0000. It is well below the .0033. Hence it can be inferred that there is a statistical significant association between the "Preferred sociometric status" and "High level of EI". The value of Adjusted Residual shows a positive association of value +5.7. So, the "sociometrically Preferred" students are positively associated (Adjusted Residual=+5.7, p<.0033) with the "High level" of Emotional Intelligence.

Similarly, the table also reveals that, the "sociometrically Preferred" students are negatively associated (Adjusted Residual=-3.4, p<.0033) with the "Average level" of emotional intelligence.

The Post-hoc test also reveals that, there is a statistical significant association between the "Rejected sociometric status" and "Low level of EI". The value of Adjusted Residual shows a positive association of value +3.9. So, the "sociometrically Rejected" students of West Bengal are positively associated (Adjusted Residual=+3.9, p<.0033) with the "Low level"of Emotional Intelligence.

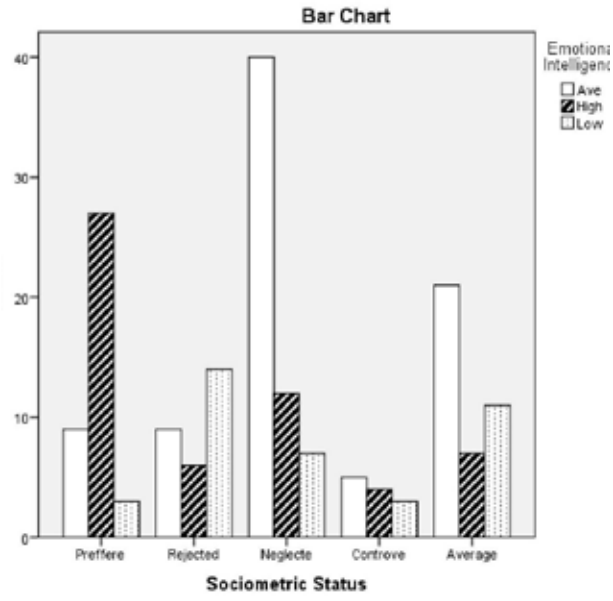
Similarly, the table also reveals that, the "sociometrically Neglected" students are significant positively associated (Adjusted Residual=3.9, p<.0033) with the "Average Level" of Emotional Intelligence.

The other two sociometric statuses such as, sociometrically "Controversial" and "Average" are not significantly associated with the "Average","High" or "Low" level of emotional intelligence.

Figure 1 also confirmed that the "sociometrically preferred" adolescents are more likely to have "High Emotional Intelligence" as compared to the students of other sociometric status.

Fig. 1

Bar graph of EI and Sociometric status



Similarly, the "sociometrically Rejected" adolescents are more likely to have "Low Emotional Intelligence"as compared to the students of other sociometric status.

But the "sociometrically Neglected" adolescents are more likely to have "Average Emotional Intelligence" as compared to the students of other sociometric status.

Discussion

The results confirmed that, most of the sociometrically Preferred students obtained High scores at EI test and few of them obtained Average score in that test. The sociometrically preferred students are those, who are liked by most of the students at a classroom and disliked by a few. Because, they received more number of 'positive

nominations' (PNR) than the average number of 'positive nominations received' (PNR) by all the students in a particular classroom. These students received less number of 'negative nominations' (NNR) than the average number of 'negative nominations received' (NNR) by all the students in a particular classroom.

It also revealed that, the sociometrically Rejected students obtained Low scores at EI test. The rejected students are those who are disliked by a most of the students at a classroom and liked by a few. These category of the students received more number of 'negative nominations' (NNR) than the average number of 'negative nominations received' (NNR) by all the students in a particular classroom. They received less number of 'positive nominations' (PNR). Similarly, the sociometrically Rejected adolescents are more likely to have Low Emotional Intelligence as compared to the students of other sociometric status.

This finding is in conformity with the finding of Rubin, Bukowski & Parker (1998) and Sujeevanamma & Anuradha (2015). In their study, Rubin, Bukowski & Parker (1998) found that, sociometrically preferred children are highly competent as far as their social functioning are concerned. In a study on elementary school children at Andhra Pradesh, Sujeevanamma and Anuradha, (2015) explored that the Emotional Intelligence positively influences the sociometric sores. The abilities of EI enable the students to act wisely in human relations. It influences their Sociometric status and strongly related to social adjustment (Engelberg & Sjoberg, 2004). The skills of Social adjustment enhance the ability to monitor and regulate one's own emotions as well as the emotions of the persons who are in the same social groups. The capabilities of awareness and regulation of the emotions of oneself and others are the key factors that influence the quality of social interactions. Research revealed that the quality social interactions influence human performance in every area of life (Salovey, Bedell, Detweiler & Mayer, 2000; Salovey & Mayer, 1990; Van der zee, Schakel Thijs, 2002). These findings revealed that the abilities of Emotional Intelligence are essential for social adjustment and developing friendships, socio emotional abilities and pro-social skills. In the same line of thought present research reveals that, higher skills of Emotional Intelligence enable a student to ensure higher sociometric status in their peer group. Similarly lower skills leads to lower sociometric status and makes a student Sociometrically Rejected.

The other two sociometric statuses such as, sociometrically "Controversial" and "Average" may have some relationship with emotional intelligence. But the present study did not find any significant association between these two types of sociometric statuses and any category (High, Average or Low) of the levels of emotional intelligence.

Conclusion

These results prove that, the Emotional Intelligence has a great influence on the relationships with the peers in the classroom. The students, who possess high emotional intelligence, have greater emotional and social skills. So, they have a higher acceptance in the peer groups, which leads them to be sociometrically preferred. A meaningful insight to the concept of Emotional Intelligence and its social implications can be provided through this study to the teachers, teacher educators, policymakers, curriculum and programme designers, parents, and students. Except all these findings, the present study has its own limitations regarding relatively small sample size. So, more experimental or longitudinal studies are needed to properly situate the nexus between these two constructs.

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A study on the influence of teaching experience on social intelligence and professional commitment of secondary school teachers of West Bengal

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Abstract

Teachers' social intelligence and the commitment to their profession highly contribute to the quality of the teaching process. This article focused on examining whether and how the levels of teachers' social intelligence and professional commitment is influenced by their experiences in teaching. The study also attempted to investigate whether there are differential effects of teachers' social intelligence on professional commitment of tecachers having different teaching experiences. Multistage sampling procedures were used to select387 (186 female and 201 male) secondary school teachers selected from five districts (viz. Hooghly, Birbhum, North Dinajpur, Murshidabad, and Nadia) of West Bengal.A cross-sectional survey research method was used for this study. One-way analysis of variance (ANOVA) and moderation analysis were employed during data analysis. Results show that teaching experience significantly influenced teachers' social intelligence and their commitment to the teaching profession. Further, the association between social intelligence and professional commitment was significantly moderated by teaching experiences of teachers.

Keywords: *Moderation, Professional Commitment, Social Intelligence, Teaching Experiences*

INTRODUCTION

Social intelligence (SI) is a very significant psychological construct mainly dealing with different social skills. Professional commitment means the psycho-social bonding of an individual in their profession. In the process of socialization and professional development, social intelligence plays an important role. Social intelligence helps to develop social skills, effective interaction skills, interpersonal relationship (Yermentaeyeva and Uaidullakyzy, 2014) mental health (Prathima and Kulsum, 2013), Professional Performance (Widodo et al., 2020), leadership qualities (Garg and Gera, 2019), Classroom Teacher-Student Interaction (Krcmar, 2018). So, it has a great contribution in the field of education, especially school education.

Teachers' Social intelligence

It is a combination of interaction style, social dynamics, interpersonal relationships, and communication in different social situations (Prathima & Umme Kulsum, 2013; Gulliford et al., 2019; Zehir & Karaca, 2019), social cooperation with others (Albrecht, 2006). The classroom is a social laboratory wherein the teacher must build a web of communication that becomes a medium for bilateral transactions between the teachers and teachers which is driven by the social intelligence of the teachers. Teachers must possess social skills to

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make the teaching-learning process more interactive. There was a difficulty in the definition of social intelligence over years (Guilford, 1967; Ford & Tisak, 1983; Thorndike, 1920). Social intelligence is part of general intelligence such as interpersonal processes and social perception (Thorndike, 1920; Mohanasundram et al., 2020), the ability to adapt the individual and social needs (Eysenck, 1985), the ability to judge everyone properly, adapting qualities in every situation (Allport, 1937), social attitudes are the ability to evaluate one (Myers, 1995) total combination and regulating the cognitive processes that related social facilities (Guilford, 1967), it is the kind of mental abilities which help in solving many societal problems (Ford & Tisak, 1983).

Different psychologists generally agree that social intelligence is undoubtedly a multifaceted construct. Different dimensions are unclear and very conflicting. The multiplicity of modes of measurement of social intelligence using the different instruments is another challenge for diverse dimensions. To measure social intelligence there were some specific modes like Self-report (Miller & Ross, 1975; Silvera et al., 2000), observation schedule (Wong et al., 1995); Scale (Moss et al., 1955; Silvera et al., 2001), Inventory (Lacanlale, 2013); test (Sullivan & Guilford, 1966; Moss, et.al., 1949) used for the same purpose. Different dimensions are unclear and very conflicting. After a thorough review of related literature different indicators of social intelligence are depicted below (see Table 1):

Table 1

Social intelligence scales used in previous studies

Existing standardised Tools	Indicators of Social Intelligence
Silvera, Martinussen and Dahl, 2001	social knowledge, social awareness, and social skill
Silberman, 2000	expressing emotions, expressing needs, understanding other people, social communication and feedback generation, motivating others, generating creative solutions in intricate situations
Buzan, 2002	verbal and nonverbal communication, active listening skills, sociability, inducement, active social medium, negotiation, and social problem solving,
impressing others, interpersonal behavior	
Sullivan & Guilford, 1966	Social awareness, comprehending social situations, understanding facial expressions, social expressivity, changing ability, managing behavioral events, and prediction.
Goleman, 2008	find solutions by discussing, establishing personal connections, being able to organise social groups, man making social analysis
Hampel, Weis, Hiller and Witthöft, 2001	social memory, social perception, and social flexibility
Prathima & Umme Kulsum, 2013	Self-Development, Empathy, Self-awareness, Value Orientation, and Social Stability

Teachers' professional commitment to teaching

Professional commitment means the psycho-social bonding of an individual in their profession (Pfeffer, 1978). It affects self-esteem (Lodahl and Kejner, 1965).It helps to identify one's profession and help to accept its values and individual belief (Morrow and Goetz, 1988). It helps in job involvement and loyalty of individuals (O'Reilly, 1991). Trained teachers are competent and committed to their profession (Dave, 1998), it has an in-depth value (Mariados, 2000). From the above discussion, it can be clear that professional commitment is the major factor inthe qualitative growth of the educational system. Teachers' commitment to learners is very important. Teachers need to be committed to their profession, society, and basic human values and need to trust for academic excellence to get the quality outcome and holistic development as well. Educationists is searching for quality for a long time over years. Teaching is a very important interactive process linked with teachers and students to get a quality outcome. Teachers' professional commitment means a psycho-social bonding of an individual in their profession. High-quality teaching-learning materials and learning resources are important for the teaching profession for high-quality teaching. Different educationists suggested some quality indicators for teaching (Killen, 2007; Lile, & Kelemen, 2014).

Review of related literature

Srivastava et al., (2016) revealed that good interpersonal skills were essential for success in both personal relationships and career endeavors. This is especially true for positions that need frequent face-to-face interaction and direct communication with co-workers. Management and organisational psychology have long investigated the causes, correlates, and different effects of professional commitment in organization (Zehir, Muceldili & Zehir, 2012). Professional commitment in their institution depends upon their loyalty to the institution (Zahed Babalan, Karimianpour & Ranjbar, 2018). Compensation and commitment were two important factor for professional commitment to the institutions irrespective of teaching experiences (Vizano et al., 2020). An successful school teacher is a dedicated, professional someone who continually expands their knowledge to better serve the children as well as able to deal with the challenges of teaching in a classroom environment. Thus, quality of instruction depends upon teachers personal traits, contentment knowledge competency, commitment and experiences in teaching profession (Gholipour Haftkhavani et al., 2012). Teachers' trust, socio-emotional and magament skills were important for professional commitment (Celep and Yilmazturk, 2012). Professional commitment would help to the quality of work (Loan, 2020). According to Ingersoll (2001), too high staff turnover rather than a complete lack of suitable teachers in the population werethe causes for teacher shortages. Researchers now recognise that quitting the profession or transferring to another institution, significantly contributes to challenges in teaching profession (Darling et al., 2003; Ingersoll, 2001). Early years teaching experiences were the most critical part of teaching for professional commitment (Chapman & Green, 1986; Fideler & Haselkorn, 1999; Feiman, 1983). Teachers induction program were the significant predictor to enhance professional commitment among teaching (Fideler & Haselkorn, 1999). Smith and Ingersoll (2001) found good monitoring by the mentor was most important against leaving the profession and help to be more commited in their particular profession (Darling et al., 2003; Humphrey et al., 2000). Although there were some studies with above mentioned variable but very less amount of studies conducted on social intelligence and professional commitment. Especially effect of teaching experience on social intelligence and professional commitment was a very significant research gap.

Need of the present study

The present study mainly focused on the influence of teachers teaching experiences on social intelligence and professional commitment. The classroom is a social laboratory wherein the teacher must build a web of communication that becomes a medium for bilateral transactions between the teachers and taught which is driven by the social intelligence of the teachers. Teachers must possess social skills to make the teaching-learning process more interactive. Teachers should create a positive constructive learning environment for quality teaching. Quality output depends upon quality input. Teachers should provide quality output and at the same time quality input for the process of education. Teachers psychologically and socially bonding to their profession is very needed. Teachers should dedicate themselves to their work without any distractions. So that they can teaching in their own ways. Then the total teaching learning would be joyful and student friendly. These are the most important criteria for quality teaching. Teachers experiences matter all the times because the more experienced we are the more we learn. Experienced teachers can channelize the students in proper direction towards their life. So, quality teaching depends upon the feedback system towards their teaching profession. The study tested whether teachers' social intelligence influences professional commitment equally for the less experienced and more experienced teachers. Major research questions: whether teachers' social intelligence and their professional commitment differ with their teaching experience, and whether teachers' social intelligence has differential effects on the professional commitment of less experienced and more experienced teachers.

Objectives

1. To examine the effect of teaching experiences on teachers' social intelligence.
2. To examine the effect of teachers teaching experience on professional commitment.
3. To investigate the moderation effect of teaching experience on the relationship between social intelligence and professional commitment.

Hypotheses of the Study

H01: There exists no significant influence of teachers' teaching experience on their social intelligence.

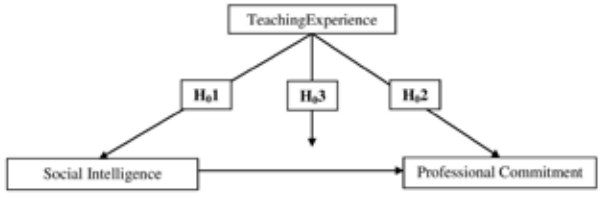
H02: There exists no significant influence of teaching experience on professional commitment.

H03: There exists no significant moderation effect of teaching experience on the interrelationships between social intelligence and professional commitment.

According to objectives following hypothetical model (see Figure 1) was developed:

Figure 1

Hypothetical model



Methodology

Population, sampling procedures and sample of the study

The secondary school teachers who teach the ninth and tenth graders in the Bengali medium secondary schools under West Bengal Board of Secondary Education (WBBSE) were the target group for the present investigation. Thus, such teachers forms the population of this study. Further, the multistage sampling procedures were employed to select a sample for the present study from the large population of teachers. In the first stage, five districts (out of twenty

three districts in West Bengal) were randomly selected using the Fish-bowl method. Then, in the second stage, six schools were randomly chosen from each of the five selected districts (viz. Hooghly, Birbhum, North Dinajpur, Murshidabad, and Nadia). The list of the schools are available from the government website: https://wbbse.wb.gov.in. Finally, all the teachers teaching the ninth and tenth graders in those 30 schools formed the sample for this study. Thus, 387 secondary level school teachers participated in this study. Among them, 186 (48.06%) teachers were female and 201 (51.94%) were male (for details, see Table 2 and figure 2). Besides, 119 (30.75%) teachers had the experience of teaching between 0-2 years (novice teachers), 133 (34.37%) teachers had between 2-5 years (experienced teachers), and 135 (34.88%) teachers had more than 5 years (expert teachers).

Table 2

Demographic profile of the participants

		Sample
		(387participants)
	N	%
Gender		
Female	186	48.06
Male	201	51.94
Teaching experience		
Novice	119	30.75
Experienced	133	34.37
Expert	135	34.88
Geographical location (Districts)		
Hooghly	73	18.86
Birbhum	77	19.90
North Dinajpur	72	18.60
Murshidabad	81	20.93
Nadia	84	21.71

Measurement

Professional commitment

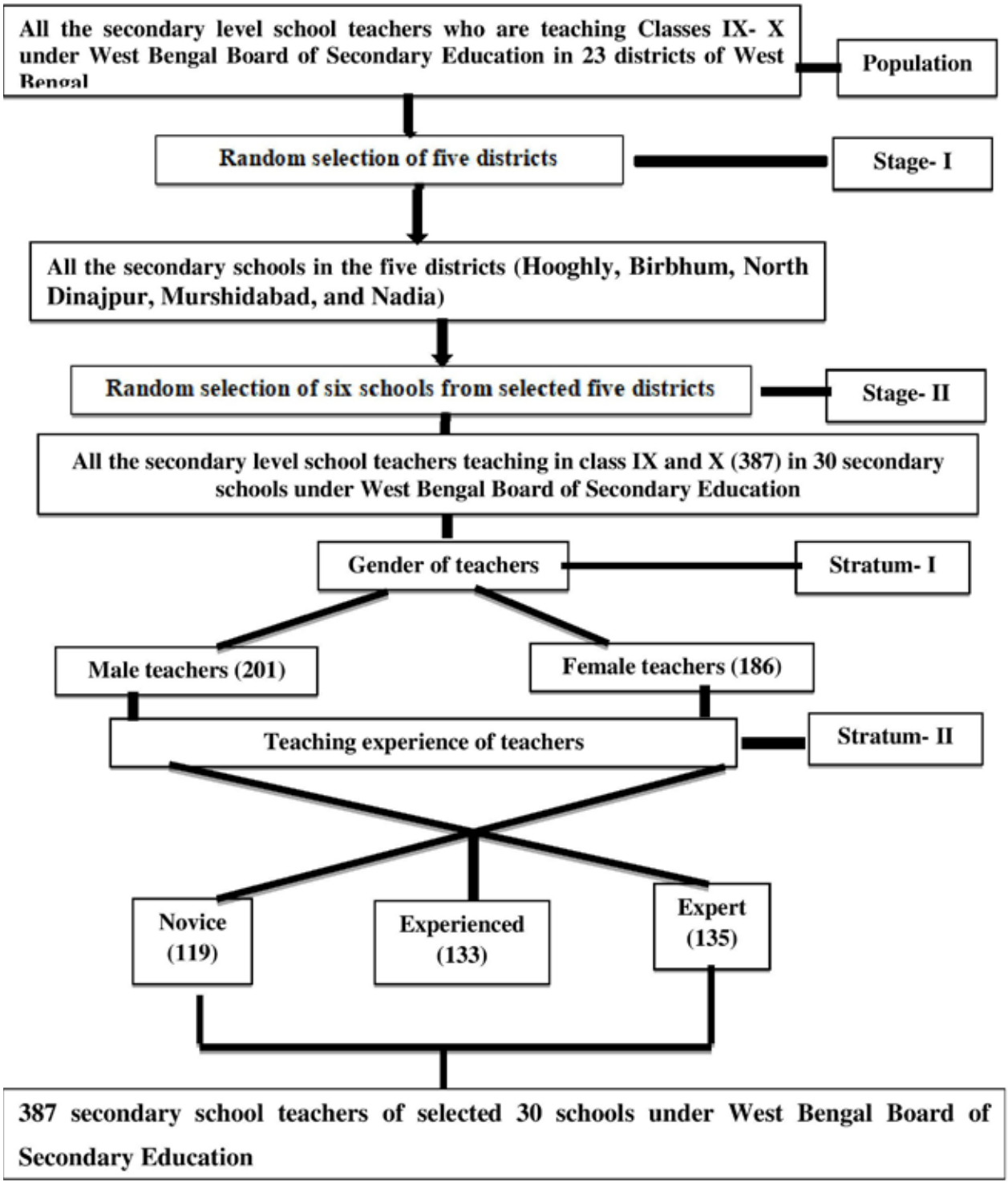
It means psycho-social bonding of an individual in their profession. The 12-item Professional Commitment Scale was used to measure teachers' professional commitment. Professional commitment consisted of five dimensions that are commitment to the profession, students, society,basic human values, and academic excellence. A five-point Likert type professional commitment scale standardised by Meyer and Allen in 1991 was used for this study.

Teachers' social intelligence

It is the combination of social awareness, social dynamics, interpersonal relationships, and interpersonal communication i.e. different social situations (Prathima & Kulsum, 2013), social cooperation with others

Figure 2

Sampling design



(Albrecht, 2006), effective interpersonal communication in every situation (Goleman and Boyatzis 2008), attainment of significant social goals in specific socio-cultural contexts (Ford, 1982), ability to deal others with adapted social skills, social cooperation, inter personal relationship, communication ability with different unknown persons in different unexpected situations (Vernon, 1933).A five-point social intelligence scale was constructed by Silvera, Martinussen, and Dahlin 2001 consisting of social knowledge, social awareness, and social skill dimensions used for this study.

Teaching experience

The teaching experience of the teachers was considered as the time duration between the date of joining as a secondary school teacher and the date of filing the questionnaires for the present study. There were following three categories teachers as per different teaching exoeriences: Novice teachers (0-2 years), Experienced teachers (2-5 years), and Expert teachers (>5 years).

Data collection procedures

Firstly, all the heads of the institution were informed about the present study. Then it was requested to allow the researcher to collect data from the teachers. The teachers were communicated about the study and the questionnaires were provided only to those teachers who agreed to provide their responses. They were assured that their responses will not be disclosed anywhere and will only be used. The teachers were asked to provide their unbiased and honest opinion regarding the statements in the questionnaires. They were also told to read the instructions before filling out the questionnaires.

Data analysis plan

Using IBM SPSS 26.0collected data were analyzed. To test the first two null hypotheses i.e.,there exists no significant influence of teachers' teaching experience on their social intelligence and professional commitment in teaching, one-way ANOVA was performed. Further, to explore the moderation analysis for the differential effect of teaching experiences on interrelationships between social intelligence and professional commitment.

Results and Discussions

Teachers' professional commitment and their social intelligence in teaching a preliminary analysis were conducted with the help of descriptive statistics. In this analysis, mean scores of the variables, skewness, kurtosis, and SD were calculated. The results were given below(see Table 3):

H01: *There exists no significant influence of teachers' teaching experience on their social intelligence.*

To test the first null hypothesis i.e. H01, one-way Analysis of variance (ANOVA) was used and the data were analyzed using SPSS. The teaching experience-wise descriptive statistics for social intelligence were presented below(see Table 4):

Table 4

Descriptive Statistics

Types	N	Mean	Std. Deviation	Std. Error
Novice Teachers	119	51.35	3.57	1.17
Experienced Teachers	133	51.17	2.87	0.37
Expert Teachers	135	56.24	1.18	0.91
Total	**387**			

Objective 1 was to know the effect of experiences in teaching on social intelligence. The teachers belonged to three groups, namely, novice (0-2 years), experienced (2-5 years), and expert (>5 years) teachers. Thus, the data were analysed using one-way ANOVA (see Table 5).

Table 5

Summary of 1 Way ANOVA of social intelligence across teaching experience of the teachers

Source of Variance	df	SS	MSS	F-value	Remark
Teaching Experience	2	1963.38	981.69	37.23	p<.01
Error	384	10127.67	26.37		
Total	386	12091.05			

It is evident from Table 4 that the ANOVA value was 37. 23 significant at a 0.01 level with df= 2, 384. Mean scores of social intelligence of the novice, experienced and expert teachers differ significantly. So, here the alternative hypothesis was accepted and the above null hypothesis was not accepted. So, the mean scores of these two variables differ significantly (see Table 5). To find out the mean score difference of social intelligence in relation to different teaching experiences the data were further analysed using Tukey HSD test or post hoc test.

So, experienced teachers and expert teachers differ significantly in relation to mean score. The mean score of expert teachers was 56.24 which was significantly higher than that of the experienced teachers whose mean score of professional commitment was 51.17 (see Table 6). Therefore, it was evident that the teachers with experience of more than 5 years of teaching are more socially intelligent as compared to those having 2-5 years of teaching. However, the mean scores of social intelligence of novice teachers and experienced teachers did not differ significantly. Hence, it can be said that both novice teachers and experienced teachers were professionally committed to teaching to the same extent. Further, the mean scores of professional commitment of novice teachers and expert teachers differ significantly. Expert teachers' mean score of professional commitment was 56.24 significantly higher in comparison to the novice teachers whose mean score of professional commitment was 51.35 depicted above (see Table 6). Therefore, it was evident that the social intelligence of expert teachers was significantly higher than that of novice teachers. On the whole, it may be said that expert teachers are significantly more socially intelligent than novice and experienced teachers.

H02: *There exists no significant influence of teaching experience on professional commitment.*

To test the second null hypothesis i.e. H02, one-way ANOVA was used and the data were analysed using SPSS. The teaching experience-wise descriptive statistics for professional commitment were shown here(see Table 7):

Table 7

Descriptive Statistics

Types	N	Mean	Std. Deviation	Std. Error
Novice Teachers	119	39.88	1.24	1.31
Experienced Teachers	133	38.93	2.08	1.17
Expert Teachers	135	36.24	2.13	0.62
Total	387			

Objective 2 was to know the effect of teaching experience on the professional commitment of teachers. The teachers belonged to three groups, namely, novice (0-2 years), experienced (2-5 years), and expert (>5 years) teachers. Thus, the data were analysed using one-way ANOVA. The results of the analysis are given below(see Table 8).

Table 8

Summary of One Way Analysis of Variance (ANOVA) of professional commitment across teaching experience of the teachers

Source of Variance	df	SS	MSS	F-value	Remark
Teaching Experience	2	1936.54	968.27	36.44	p<.01
Error	384	10203.37	26.57		
Total	386	12139.91			

It was evident from Table 8 that the F-value was 36.44 significant at a 0.01 level with df=2,384. Mean scores of professional commitment of the novice, experienced and expert teachers differ significantly. Therefore, the H0 was rejected. So, it can be concluded that the mean score of professional commitment differs significantly across teaching experiences. To find which teachers had significantly higher mean scores of professional commitment Tukey HSD test was used (see Table 9).

Table 9

Post Hoc Tests

Types	M	N	Novice Teachers	Experienced Teachers	Expert Teachers
Novice Teachers	39.88	119	---	Not significant	*
Experienced Teachers	38.93	133		---	*
Expert Teachers	36.24	135			---

Significant at 0.05 level

Therefore, professional commitment of experienced teachers and expert teachers differ significantly in relation to their mean score. The mean score of expert teachers was 36.24 which was significantly higher than that of the experienced teachers whose mean score of professional commitment was 38.93 (see Table 9). Therefore, it was evident that the teachers with experience of more than 5 years of teaching were more committed to their profession as compared to those having 2-5 years of teaching. However, the mean scores of professional commitment of novice teachers and experienced teachers did not differ significantly. Hence, it can be said that both novice and experienced teachers were committed towards teaching to the same extent. Further, the mean scores of professional commitment of novice teachers and expert teachers differ significantly. Expert teachers' mean score of professional commitment was 36.24significantly lower in comparison to the novice teachers whose mean score of professional commitment was39.88 depicted below (see Table 9). Therefore, it was evident that the professional commitment of novice teachers is significantly higher than that of expert teachers. On the whole, it may be said that novice teachers are significantly more committed to their profession than the expert and the experienced teachers.

H03: *There exists no significant moderation effect of teaching experience on the interrelationships between social intelligence and professional commitment.*

Here, a major objective to study whether the interrelationships between teachers' social intelligence and professional commitment a moderation analysis was conducted. From the above hypothesis it can be said that whether social intelligence and professional commitment differs significantly across novice, experienced, and expert teachers (H03). A path model was constructed where social intelligence was the predictor and professional commitment was the outcome variable, whereas teaching experience was considered as the moderator. Results have been shown (see Table 10).

Table 10

Moderating effect of teaching experience on the interrelationship between social intelelligence and professional commitment

Regression path	B	SE	t	LLCI	ULCI
Predictor=SI, Moderator= Teaching Experience, Outcome variable= Professional Commitment					
Constant	13.96	0.71	4.12**	12.17	15.75
Social Intelligence	0.28	1.27	0.88*	0.17	0.39
Teaching Experience	2.04	0.81	1.37*	1.78	2.30
Interaction: Social Intelligence *Teaching Experience	0.64	0.13	2.21*	0.47	0.81
Conditional Effects					
Novice Teachers	0.43	0.18	1.21*	0.35	0.51
Experienced Teachers	0.37	0.13	0.92*	0.23	0.51
Expert Teachers	1.12	0.61	2.61**	0.79	1.45

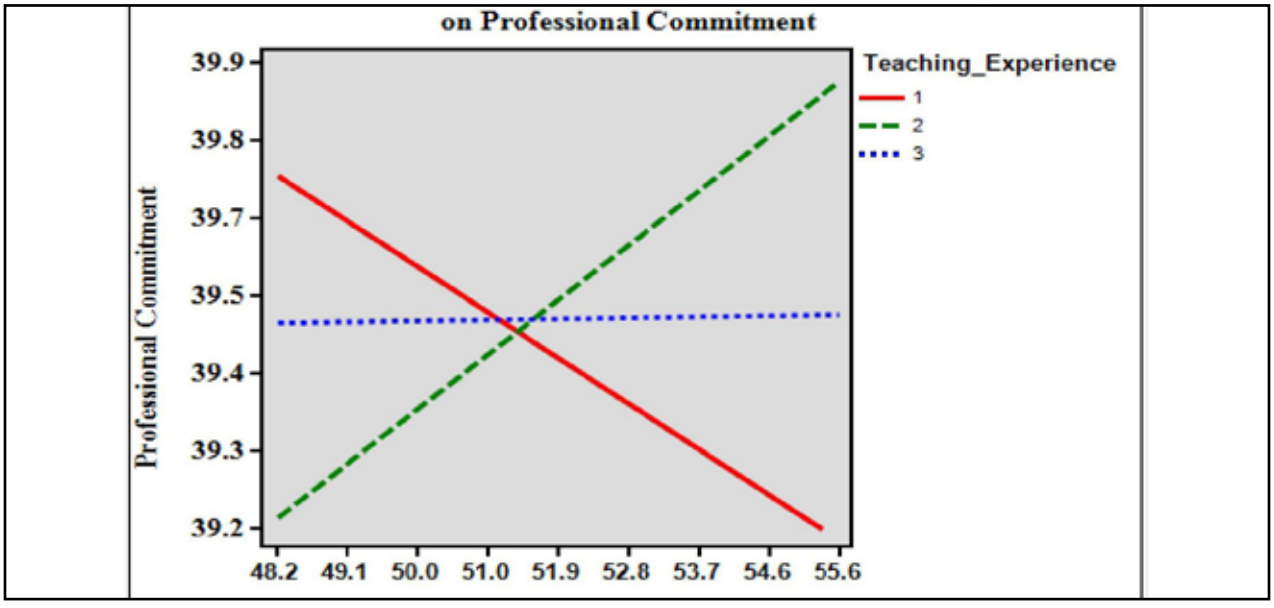
Note. SI= Social Intelligence, PC= Professional Commitment, SE: Standard Error, LL: lower limit, UL: upper limit, CI: confidence interval, **p<.01, *p<.05

The model explained a 47.25% (R2) variance in professional commitment. Social intelligence had significant effects on professional commitment (B= 0.28, SE=1.27, t=0.88, $p<0.05$, 95% CIs [0.17, 0.39]. Teaching experience had significant effects on professional commitment (B= 2.04, SE=0.81, t=1.37, $p<0.05$, 95% CIs [1.78, 2.30]. The

interaction between social intelligence and teaching experience had significant effects on professional commitment (B= 0.64, SE=0.13, t=2.21, p<0.05, 95% CIs [0.47, 0.81]. Further, the conditional effects (see Figure 3) were the largest for the Expert teachers (B= 1.12, SE=0.61, t= 2.61, p<0.01, 95% CIs [0.79, 1.45]) and were the smallest for the Experienced teachers (B= 0.37, SE= 0.13, t= 0.92, p<0.05, 95% CIs [0.23, 0.51]). However, the conditional effects for Novice teachers (B= 0.43, SE= 0.18, t= 1.21, p<0.05, 95% CIs [0.35, 0.51]) were also significant. So, it can be concluded from this analysis that there exists a significant moderation effect of teaching experience on the interrelationships between social intelligence and professional commitment. Hence, teaching experiences has a significant mediator on the interrelationships between social intelligence and professional commitment. So, teaching experiences effects social intelligence and professional commitment.

Figure 3

Moderation effect of teaching experience on the relationship between social intelligence and professional commitment of teachers



Note. Novice teachers (0-2 years) are coded as 1, Experienced teachers (2-5 years) are coded as 2, and Expert teachers (>5 years) are coded as 3.

Discussions

Social intelligence is a part of intelligence which deals with specific types of general ability, practical knowledge, social cooperation and social adaptation as per different social situations. Here as per the teaching experiences teachers social intelligence and professional commitment has been discussed. On the basis of data analysis, the major findings emerged from the first hypothesis that the social intelligence of experienced teachers and expert teachers differ significantly in relation to mean score. The mean score of social intelligence of the expert teachers was 56.24 which was significantly higher than that of the experienced teachers (mean score=51.17) and novice teachers (mean score = 51.35). Therefore, it was evident that the social intelligence of expert teachers was significantly higher than that of novice

teachers. On the whole, it may be said that expert teachers are significantly more socially intelligent than novice and experienced teachers. Expert teachers have more social intelligence because they have more experience in the teaching profession and they face many challenging situations than novice teachers. These findings are in the line of Mohadesi , (2021); Thorndike, (1920); Chidolue (1996); Rice (2003); Murnane et al., (1991); Leigh (2007); Needels, (1991).

However, after analysing the data it can be concluded from the second hypothesis that the professional commitment of experienced teachers and expert teachers differ significantly in relation to their mean score. The mean score of expert teachers was 36.24 which was significantly higher than that of the experienced teachers (mean score=38.93) but lower from novice teachers (mean score=39.88). Therefore, it was evident that the professional commitment of novice teachers is significantly higher than that of expert teachers. On the whole, it may be said that novice teachers are significantly more committed to their profession than the expert and the experienced teachers. These findings are in line with some previous studies (Darling- Hammond & Sykes, (2003); Humphrey et al., (2000); NCTAF, (1996); Smith & Ingersoll, (200s4). Socially intelligent people can handle every psycho-social problem in any challenging situation. From the previous studies it was also depicted that social intelligence is one of the prerequisites for a successful professional development. Every institution is a social laboratory and students come from different socio-cultural backgrounds. So, to understand the students' problems empathetically, social intelligence of teachers is very much required (Yermentaeyeva, et al., 2014).

Further, after analysing the third hypotheses the conditional effects were the largest for the Expert teachers (B= 1.12, SE=0.61, t= 2.61, $p<0.01$, 95% CIs [0.79, 1.45]) and were the smallest for the Experienced teachers (B= 0.37, SE= 0.13, t= 0.92, $p<0.05$, 95% CIs [0.23, 0.51]). However, the conditional effects for Novice teachers (B= 0.43, SE= 0.18, t= 1.21, $p<0.05$, 95% CIs [0.35, 0.51]) were also significant. So, it can be concluded from this analysis that the effect of teaching experience on the interrelationships between social intelligence and professional commitment. If teaching experiences increase then social intelligence and professional commitment also increases. These findings are also in the line of many previous studies and social intelligence makes sense to discuss future teachers' communicative competence while addressing the issue of their social intelligence. Teachers who are socially intelligent, professional commitment and communicative competence also increased because expert teachers face many challenges of life and can guide in a proper way to direct students in the right direction Durksen, and Klassen, (2012), Weiss, E. M. (1999). Darling- Hammond & Sykes, (1996).

Social intelligence helps to increase communication skills which is very important for the teaching profession. Flowing previous studies showed that social intelligence, teaching experience, communication skills and professional commitment is interlinked. It also results that novice teachers had higher levels of social adaptability, social expressivity, and social cooperation than , making them more professionally committed and social in nature. It also helps to transform their colleagues' environment to be more joyful and next generation future students and teachers will be more sociable. Social intelligent teachers can deal with any challenging situations of society and are able to inculcate the same towards their students. Students with high social intelligence can understand human behavior, nonverbal attitude, decision about others and are able to augur others' reactions. Low socially intelligent students are not able to adjust in social situations. (Yermentaeyeva, et al., 2014).

Conclusion

The study concludes that novice teachers are more committed to their profession than

experienced and expert teachers. Perhaps, the experienced teachers were found to be engaged due to their mental fatigue or due to teacher burnout. On the contrary, expert teachers are more socially intelligent than novice and experienced teachers. Further, teachers' social intelligence was associated with their professional commitment to teaching irrespective of their teaching experiences. The strongest relationship was found between social intelligence and professional commitment for the teachers who are more experienced mainly with more than 5 years of experience. However, the professional commitment was found to be more important for the experienced teachers to enhance their professional commitment to teaching. Thus, the study recommends refreshment courses especially, for the experienced teacher to cope with the teacher burnout. The study was only limited to a particular board that was west Bengal board of secondary education (WBBSE). Further, the respondents selected in the present study were limited only to the teachers who are teaching in secondary level schools only. Thus, the study may be extended by including the teaching in higher education institutions in others states across India.

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Developing an Inclusive education teaching aptitude test: Pilot testing and item selection

Do not take the risk, pilot test first. -De Vaus (1993)

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Abstract

Pilot testing refers to pre-testing of a particular research instrument. Pilot study is a crucial element of a good study design; it fulfils a range of important functions and can provide valuable insights for other researchers. This paper reports the pilot testing process of draft inclusive education teaching aptitude test (IETAT), principally focusing on the trial version of actual test administration along with item analysis in terms to determine difficulty values and internal consistency indexes of test items. Data were collected from 38 pre-service teachers of a teacher education institution. Result indicated that the pilot testing helped in removing the weak items with ambiguity and deficiency, standardisation of test instruction and time limit, and developing the final version of IETAT. This paper highlights the importance of pilot testing in terms of improving the test item validity, adds to the body of knowledge on pilot studies, and contributes to the development of test development.
Keywords: *Pilot testing, inclusive education, teaching, aptitude, pre-service teachers*

INTRODUCTION

After constructing a test, the next step is to try itout, and this step is further divided into a pilot study and the finalisation of the test. A pilot study is used in two different ways: feasibility studies, i.e., pilot-testing, or a trial run (Polit et al., 2001; Baker, 1994). The main advantage of pilot testing an instrument is to get advance warning about inappropriate or complicated testing. The major reasons for conducting a pilot study of a testing instrument can be testing adequacy, assessing feasibility, and designing a research protocol (Teijlingen Van & Hundley, 2001). Generally, pilot studies are likely to be "under-discussed, under-used, and under-reported" (Prescott & Soeken, 1989). Full reports of pilot studies are rare in the research literature (Lindquist, 1991; Muoio et al., 1995; Teijlingen Van et al., 2001). Research papers mostly refer only to one element, either pre-testing or pilot-testing, of an instrument for validity and reliability (De Vaus, 1993). When detailed pilot studies are mentioned in academic papers or reports, researchers get a chance to learn from the pilot study and get ideas for making necessary changes in their investigation (Teijlingen Van & Hundley, 2001). The process and outcomes of pilot testing described in detail can be very useful to others embarking on projects with similar methods and instruments. With the understanding that a well-designed and well-conducted pilot study can inform us about the best research process and, on occasion,

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about likely outcomes, an attempt is made to report the entire phase of the pilot study, particularly the actual improvements made in the test.

Teacher education and school leadership are considered essential components by many academicians for implementing inclusive education in the classroom (Ainscow, 2005; Sandhill & Singh, 2005; Booth et al., 2003; Ainscow, 1991). The general teacher education diplomas and degree courses available in India were offering "special education" as an optional paper to train and prepare teachers to identify and assess disability, but it was not an integral part of the training and could not train teachers to deal with challenges, diversity, and negative attitudes (Singhal, 2005). This could have led to distrust in both the special and mainstream education systems, as well as keeping children with disabilities (CWD) at home for fear of abuse or neglect in the classroom (Zulka, 2005).If the teachers' attitude towards inclusion is not positive and they lack concern, then they find themselves unprepared for inclusion and for teaching all learners (Ellins & Porter, 2005; Forlin, 2001).

Until 2015, the teacher education programmes in India offered an optional paper on special education, and prospective teachers with an interest in inclusive education for CWD were opting for it. Since the National Council for Teacher Education's (NCTE, a statutory body of the Government of India) guidelines (2014), inclusive education has been an integral part of the curriculum. As pointed out earlier, since general teacher education courses are mainly focused on preparing teachers for general schools, there is a need to select candidates with aptitude towards inclusive education. Individuals with a high teaching aptitude for inclusive education should be identified through appropriate testing and advised to join an inclusive school after receiving training. As a result, admitting candidates with an aptitude for inclusion can help to ensure the success of inclusive education.

The general teacher education programmes (Diploma in Elementary Education [D.El. Ed.], Bachelor of Education [B.Ed.], and Master of Education [M.Ed.]) available in India are focused mainly on preparing teachers for general schools, and they merely teach inclusive education as a subject wherein pre-service teachers are equipped with theoretical knowledge but practical practise is not given its due (Sharma et al., 2009; Bhatnagar & Das, 2013). Thus, pre-service teachers often find themselves not trained enough for inclusive schools and thereby hesitate to join such schools (Forlin, 2001). This could be one of the main reasons for the shortage of teachers for inclusive education in India. Thus, selecting the right personnel for inclusive education to undertake teacher education courses through the application of suitable scientific techniques is the need of the hour.

When we say that a person possesses an aptitude for teaching in inclusive education, it is assumed that s/he has a good proportion of the traits that are required for becoming successful as an inclusive education teacher. The magnitude of these traits may differ from person to person, or even the number of traits possessed by each person may also differ, as some may possess more traits than others. A number of traits required for being a successful teacher in inclusive education compose, as a whole, the aptitude for teaching in inclusive education. Thus, the high or low aptitude for teaching in inclusive education is in proportion to the number of traits possessed by an individual. It also depends on the nature of the traits possessed.

When estimating the aptitude for teaching in inclusive education, the factors that contribute to the success of teaching in inclusive education should be measured through proper tests. The

aptitude for teaching inclusive education is in proportion to the number of such factors and also to their magnitude. Such factors are also important in conditioning success in teaching inclusive education. By constructing the present inclusive education teaching aptitude test, an attempt is made to satisfy a felt need for such a test. Unlike other tests constructed so far meant for general teaching aptitude, the Inclusive Education Teaching Aptitude Test (IETAT) was specifically prepared to measure the aptitude of pre-service teachers for teaching in inclusive education and is referred to as the IETAT.

The first phase of pilot testing of the IETAT involved discussions with experts to determine the factors related to successful teaching in inclusive education, the phrasing and order of items, and the range of answers on multiple-choice questions (Teijlingen Van & Hundley, 2001). A list of 33 traits relating to the teaching of inclusive education was prepared based on a review of literature and materials on teaching and learning in inclusive settings. The subject matter experts (SMEs) in the fields of inclusive education, teacher education, and psychology of education were requested to rate the most important traits for teaching in inclusive education. Besides rating, they were also asked to suggest traits that could be included in the IETAT. Based on the SME ratings, 12 traits were found to be most important. Furthermore, some of the interconnected and similar in nature traits were grouped, and the following factors were discovered:

- Knowledge about inclusive education
- perceived ability to identify disabilities
- attitude towards teaching children with disabilities
- perceived ability to adapt inclusive teaching methods
- Skills to manage an inclusive classroom

Initially, 97 items were framed (see author, 2018 for more information on the items) under the five factors listed above and referred back to the SMEs for criticism and content validity. Based on the SMEs' ratings of the items (Lawshe, 1975), 27 items with lower ratings were removed due to low content validity, and a total of 70 items were retained in the IETAT for pilot testing, with 32 items modified based on the SMEs' suggestions (see the author, 2018 for more details about the items).

Conducting a pilot study does not guarantee success in the main study, but it does increase the likelihood. Pilot studies fulfil a range of important functions and can provide valuable insights for other researchers. More discussion of the process and outcomes of pilot studies is needed among researchers (Teijlingen Van & Hundley, 2001). Thus, this paper attempts to discuss the process and outcomes of developing a valid test with the goals of determining the range of applicability, identifying weak or defective items, determining difficulty values and discriminating power of items, determining the validity of items, standardising instructions, and fixing the time limit for the entire test.

Methods

Participants

The sample for this pilot study was pre-service teachers enrolled in the first year of a two-year B.Ed. programme at a teacher education college of a private university, selected randomly by lottery. The college was not identified so as to maintain the anonymity of the respondents. There were 50 pre-service teachers enrolled in the teacher education college, and all were considered a sample for pilot testing. During the time of data collection, 38 pre-service teachers were present in the college, so the final sample size for pilot testing was restricted to 38 pre-service teachers. The demographic information of the sample is given in Table 1.

Table 1

Demographic information of sample

Variables	Demographic information
Age group	21 to 25 years (N=23, 61%) 26 to 30 years (N=11, 29%)
	More than 30 years (N=4, 10%)
Gender	Male (N=5, 13%) Female (N=33, 87%)
Habitat	Urban (N=33, 87%) Rural (N=5, 13%)
Educational level	Graduate (N=24, 63%) Postgraduate (N=14, 37%)
Education stream	Arts (N=9, 24%) Commerce (N=11, 29%) Science (N=15, 39%) Other (N=3, 8%)
Previous teaching experience	Yes (N=11, 29%) No (N=27, 71%)

Instrument

As no validated questionnaires relevant to the teaching aptitude of pre-service teachers towards teaching in inclusive education were found in the review of the literature, a draught of an IETAT was developed. The primary goal of the IETAT pilot testing was to determine item validity, item difficulty, a discriminating index for selecting items for the final version of the IETAT, standardise instructions, and determine testing time.70 items related to inclusive education were listed in the IETAT. Four options were given with every item. The respondents had to choose one correct option from the four options. The test also included items relating to the demographic information of the participants: gender, age, habitat (rural or urban), education level, educational stream, and previous teaching experience, if any. The items were organised under general information and five factors. The factor-wise distribution of the items is given in Table 2.

Table 2

Factor wise items included in the IETAT

	Factor	Item Nos. in IETAT	No. of Items
I.	Knowledge about inclusive education	1-15	15
II.	Perceived ability to identify disabilities	16-29	14
III.	Attitude towards teaching children with disabilities	30-42	13
IV.	Perceived ability to adapt inclusive teaching methods	43-57	15
V.	Skills to manage inclusive classroom	58-70	13
Total	**70 items**		

Procedure

A questionnaire survey design was employed to gather the data in terms of item difficulty and validity from the pre-service teachers enrolled in the first year of a two-year B.Ed. program. The detailed procedure of the pilot study is described below.

Administration of the Pilot Test

With prior permission from the administrative head of the selected teacher education institution, the pilot testing of IETAT was done in the second semester of the B.Ed. program. During the administration, the purpose of the test was made clear to the pre-service teachers. Necessary instructions (see under the heading "Instructions to Respondents" below) were given in the test and also verbally before administration of the pilot form of the IETAT. Time restrictions were not implemented during the pilot testing of the IETAT, and the pre-service teachers were given the chance to attempt every item of the test, but the time taken by the average number of respondents in attempting the whole test was noted down. Participants were also asked to write about their difficulties answering the questions and taking the entire test. They were also asked to write down any suggestions, comments, or feedback they had on any item or on the entire test in order to help it improve further. It is believed that the test maker cannot control testing conditions but can take necessary precautions. Detailed written instructions were provided in the test booklet, and the participant pre-service teachers had to follow the instructions strictly. The investigator had ascertained that the pre-service teachers understand the direction properly, don't use any unfair means, and respond faithfully. Furthermore, having the investigator collect the data ensured a higher level of consistency in the test administration. At the start of IETAT, instructions for answering test items with examples were provided. Care was also taken to see that the directions provided in the test booklet are complete in terms of explaining to the pre-service teachers things like what to answer, how to answer, and where to record the answers. The test was administered to the pilot study participants in the same way as it will be administered in the main study (Peat et al., 2002).

Instructions to Respondents

After review of the tests constructed earlier and consultation with the experts, the following written instructions were given in the test:

- Provide all the general information about your age, gender, stream, level of education, and teaching experience by marking a "tick" (√) in the square box against the appropriate alternative given with every item.
- There are 70 items listed under five factors. You are required to respond to all questions.
- Do not leave any item unanswered.
- There is no time limit for completion of this test. However, work as quickly as possible.
- The main purpose of this test is to measure only your aptitude. There are no marks for this test, and this test will not affect your result or academics.
- Besides answering, describe your difficulties (if any) in answering and your suggestions, opinions, or feedback for further improvement of the item(s).
- Research studies are useful only when reliable and accurate data are collected. So please give honest and sincere answers.
- Return the answer sheet along with the test booklet to the test administrator after answering all the items.

Though the above-mentioned written instructions given in the test were comprehensive and self-explanatory, the following verbal instructions were also given to the participants.

- If you have any difficulty regarding the test, ask the test administrator; do not ask or discuss with others.

- You will be given enough time to answer all the items, so give the answer after due deliberation without hasting to finish the test.
- You have to give an answer for all the items, so please see whether all items are answered before submitting your answer sheet to the test administrator.
- You can write your suggestion(s) or comment(s) on the item(s) for its further improvement.
- Your sincere and honest answers will help us a lot in our endeavour.

Time Limit

As the IETAT was exclusively a power test, time restrictions were not imposed, and full time was given to the respondent to answer all the items of the test. The respondents were instructed to raise their hands as soon as they finished the whole test. The time was noted when they started to answer. The investigator noted the time when the first hand was raised, which was the same as when the last hand was raised. The shortest and longest times recorded for completing the whole test were 20 minutes and 40 minutes, respectively, and the average 30 minute time was reasonable (Peat et al., 2002).

Scoring

One mark was assigned to every correct answer to the item, and no mark was assigned to the wrong answer. The pilot form of the test consisted of a total of 70 items; thus, the total score obtainable was 70.

Results and Discussion

Item analysis

In order to produce an effective and useful test, the investigator analysed the items with which the IETAT is to be assembled. The item analysis is based on the statistical aspects of difficulty level and internal consistency indices. The main objective of item analysis is to obtain information concerning items and, thereby, select the best items to compose the final form of test.

Aptitude tests are power tests, so item analysis is more important than achievement-type tests (Guilford, 1956), which are considered speed tests. In this regard, Gulliksen (1950) says that in the construction of aptitude tests, the item statistics may be allowed to control rejection or selection of items more fully than in achievement tests. As the present test is an aptitude test, it needs item analysis for composing the final test form.

After pilot testing, the scoring was done by the investigator himself. 38 answer sheets were examined, and all the items were scored as per the scoring method described above. Based on the scores, two groups, "high scoring" and "low scoring," were formed as follows:

- Ranks were assigned to answer sheets as per the score, i.e., from highest to lowest.
- All the answer sheets were arranged according to rank, i.e., the score sheet, with the highest rank at the top and the lowest rank at the bottom.
- From the pile of answer sheets, upper 27% per cent(10 answer sheets with higher scores) and lower 27per cent% (10 answer sheets with lower scores) were chosen.
- The middle 46per cent% (18 answer sheets) were discarded.

The number of correct responses to an item in each group was determined and tabulated after the formation of upper and lower groups. From the correct responses for each item, percentages were calculated. Then the correction for chance success was applied, and the percent of correct responses were calculated using the above formula. The corrected percentages of correct responses have been given in Table 3.

Item difficulty

The standard method for determining the difficulty of items is the proportion of the group that answers the item correctly. When the item is scored either 0 or 1, the simplest index of its difficulty is the mean item score

P (Guilford, 1956), and the most obvious way of expressing the difficulty level of an item is the percent of the try-out group that marks it correctly (Davis, 1959). Thus, following these suggestions, indices of item difficulty for each item were calculated from the correct answers of the upper and lower groups. A decrease in percentage will increase the difficulty value of an item.

The following formula was used to calculate the difficulty value "D" of each item:

D= (U-L)/2

Where,

D = difficulty value of the item.

U = percentage of respondents scoring the item correctly in the upper 27% after being corrected for guesswork.

L = percentage of respondents scoring the item correctly in the lower 27% after being corrected for guesswork.

The difficulty values (D) for each item calculated by using the above formula are given in table Table 3. The lower the value of 'D', the higher the difficulty level of the item. The highest difficulty value observed was 93.4 (item 63), and the lowest difficulty value of the item seen was 13.4 (items 35, 36, 37, 56, and 68). Thus, the difficulty values of the items chosen ranged between 93.4 and 13.4, while the validity index ranged between 26 and 82. All the retained items were then rearranged as per their difficulty value, i.e., from higher to lower difficulty value, in each section. Thus, the items were placed in order of most easy to most difficult.

Item discrimination indices

This includes both "internal consistency item discrimination" and "item validity indices." This discrimination may be in terms of the total score on the test, or it may be in terms of some external criterion score of job performance. The relationships between the total score derived from a test and item scores are referred to as "internal consistency item discrimination indices."

The present IETAT includes five sections to measure five different factors. So the test can be said to be heterogeneous as it measures five different factors, while the sections are homogeneous as the items included in each section are constructed to measure the same factor. Therefore, both item validity and item analysis techniques were applied to the test items. Item validity was determined by experts' judgment, while item analysis was done by measuring internal consistency.

The commonly used methods to indicate the correlation of an item with the total score are bi-serial "r," point bi-serial "r," tetra-choric "r," and the phi-coefficient. Out of these, the bi-serial correlation, which is usually regarded as the standard procedure in item analysis (Garrett, 1966), as an index of discriminating power, appears to be the most numerous. Thus, the bi-serial "r" method was used to determine the discriminative power of the items of the present IETAT.

The investigator used Flanagan's table of the normalised bi-serial coefficient of correlation, which makes it simple to compute item validity coefficients from percentages of correct answers in the upper and lower groups. The indices of internal consistency for each item are given in the following table:

It can be observed that out of 70 items covered under pilot testing, a total of 20 items were rejected due to low validity indices. Sectionally, five items (items 1, 7, 8, 9, and 13) from Section I, four (items 19, 21, 22, and 28) from section II, three (items 39, 41, and 42) from Section III, five (items 40, 50, 51, 52, and 54) from Section IV, and three (items 59, 60, and 65) from Section V were rejected due to low validity indices. Further, it can also be seen that the highest validity of an item was found to be 0.82 (item 33), and the lowest validity index was seen to be 0.26 (item 6). Garrett (1966) considers items with validity indices of.20 or higher to be satisfactory. Items with validity indices of.20 or lower were thus rejected.

Table 3

Internal consistency data (U & L), internal consistency index (r) and difficulty values (D) of the items

Item No.	U%	L%	D	R	Item No. New Order
Section I: Knowledge about inclusive education					
1	60	73.3	66.7	.00	Rejected
2	86.7	50	68.4	.42	4
3	46.7	6.7	56.9	.53	6
4	60	6.7	33.4	.61	9
5	86.7	60	73.4	.34	2
6	73.3	50	61.7	.26	5
7	100	100	100	.00	Rejected
8	33.3	33.3	33.3	.00	Rejected
9	-6.7	-6.7	-6.7	.00	Rejected
10	100	46.7	73.4	.70	3
11	60	33.3	46.7	.29	7
12	100	73.3	86.7	.51	1
13	33.3	20	26.7	.15	Rejected
14	60	6.7	33.4	.61	8
15	33.3	6.7	20	.42	10
Section II: Perceived ability to identify disabilities					
16	33.3	20	46.7	.53	15
17	33.3	6.7	20	.42	19
18	73.3	50	61.7	.25	12
19	46.7	46.7	46.7	.00	Rejected
20	73.3	46.7	61.7	.28	11
21	-20	-6.7	-6.7	.00	Rejected
22	46.7	33.3	40	.10	Rejected
23	73.3	20	46.7	.53	16
24	20	6.7	13.3	.29	20
25	86.7	20	53.4	.62	14
26	33.3	6.7	20	.42	18
27	60	20	40	.40	17
28	33.3	60	46.7	.00	Rejected
29	86.7	33.3	60	.54	13
Section III: Attitude towards teaching children with disabilities					
30	86.7	60	73.4	.32	23
31	60	20	40	.38	27
32	100	73.3	86.7	.50	21
33	100	20	60	.82	24
34	73.3	6.7	40	.71	26

35	20	6.7	13.4	.29	28
36	20	6.7	13.4	.29	29
37	20	6.7	13.4	.29	30
38	60	20	40	.38	25
39	46.7	60	53.4	-.13	Rejected
40	100	73.3	86.7	.54	22
41	46.7	73.3	60	-.30	Rejected
42	73.3	86.7	80	-.18	Rejected
Section IV: Ability to adapt inclusive teaching methods					
43	73.3	33.3	53.3	.41	33
44	86.7	60	73.4	.32	31
45	60	20	40	.38	35
46	-6.7	6.7	00	.00	Rejected
47	33.3	6.7	20	.42	39
48	46.7	20	33.4	.33	36
49	100	20	60	.80	32
50	6.7	-6.7	-6.7	.00	Rejected
51	6.7	20	-6.7	.00	Rejected
52	6.7	20	-6.7	.00	Rejected
53	86.7	20	53.4	.60	34
54	73.3	60	66.7	.15	Rejected
55	46.7	6.7	26.7	.51	37
56	20	6.7	13.4	.29	40
57	46.7	6.7	26.7	.51	38
Section V: Skills to manage inclusive classroom					
58	86.7	60	73.4	.31	42
59	-6.7	-6.7	00	.00	Rejected
60	-20	-6.7	-6.7	.00	Rejected
61	86.7	46.7	66.7	.45	43
62	73.3	6.7	40	.69	45
63	100	86.7	93.4	.38	41
64	33.3	6.7	20	.42	48
65	6.7	6.7	6.7	.00	Rejected
66	46.7	20	33.4	.29	46
67	33.3	6.7	20	.42	49
68	20	6.7	13.4	.29	50
69	73.3	46.7	60	.29	44
70	46.7	20	33.3	.29	47

Item selection

The items for the IETAT were selected based on experts' criticism, item validity, difficulty value, and internal consistency. All the items were validated against item validity and internal consistency. All unnecessary, difficult, or ambiguous items were discarded, and some items were reworded (Peat et al., 2002).

After calculating the difficulty values, the items were grouped as per the guidelines of Henning (1987) given in the following table 4. Out of 70 items, 15 were found easy, 25 were found moderate, and 30 items were found difficult. To determine the range of difficulty values of items, the data related to item difficulty values are further grouped according to the scheme of distribution provided by W. Summer and Garrett.

Table 4

Distribution of items of pilot test as per Henning's guidelines of item difficulty

Difficulty Level	Description	Items	Total
≤ .33	High Difficult	4, 8, 9, 13, 14, 15, 17, 21, 24, 26, 35, 36, 37, 46, 47, 48, 50, 51, 52, 55, 56, 57, 59, 60, 64, 65, 66, 67, 68, 70	30
.34 to .66	Moderate Difficult	3, 6, 11, 16, 18, 19, 20, 22, 23, 25, 27, 28, 29, 31, 33, 34, 38, 39, 41, 43, 45, 49, 53, 62, 69	25
≥ .67	Low Difficulty/Easy	1, 2, 5, 7, 10, 12, 30, 32, 40, 42, 44, 54, 58, 61, 67	15
Total			**70**

The data presented in Table 5 shows the distribution of items as per W. Summer's scheme. There should be 12, 37, and 13 items in the range of difficulty indices 0 to 40, 41 to 60, and 61 to 100, respectively. But the present test indicates that there were 34, 18, and 18 items in the range of difficulty indices 0 to 40, 41 to 60, and 61 to 100, respectively. Thus, the distribution of items in the present pilot test was found to be somewhat different from W. Summer's scheme of distribution.

Table 5

Distribution of items of pilot test according to difficulty indices on the lines of W. Summer

Difficulty Indices	Total No. of Items in Pilot Test		Total No. of Items Rejected		Total No. of Items Retained	
	No. of Items	% of Items	No. of Items	% of Items	No. of Items	% of Items
0 to 40	34	48.57	11	15.71	23	32.86
41 to 60	18	25.71	5	7.14	13	18.57
61 to 100	18	25.71	4	5.71	14	20
Total	**70**	**100**	**20**	**28.56**	**50**	**71.43**

The items were further grouped as per Garrett's scheme of test item distribution based on the difficulty indices. Garrett suggested the distribution of 25per cent, 50per cent, and 25per centof items in the range of difficulty indices 0 to 25, 26 to 75, and 76 to 100, respectively. The following table 6 presents the items of the constructed IETAT according to the difficulty indices along the lines of Garrett's scheme of distribution of test items. As per Garrett's scheme of test item distribution, there should be 18, 35, and 17 items in the range of difficulty indices 0 to 25, 26 to 75, and 76 to 100, respectively. But the present test indicates that there were 21, 43, and 6 items in the range of difficulty indices 0 to 25, 26 to 75, and 76 to 100, respectively. Thus, the distribution of items in the present pilot test is also not so close to Garrett's scheme of distribution.

Table 6

Distribution of items of pilot test according to difficulty indices on the lines of Garrett

Difficulty Indices	Total No. of Items in Pilot Test		Total No. of Items Rejected		Total No. of Items Retained	
	No. of Items	% of Items	No. of Items	% of Items	No. of Items	% of Items
0 to 25	21	30	9	12.86	12	17.14
26 to 75	43	61.43	9	12.86	34	48.57
76 to 100	6	8.57	2	2.86	4	5.71
Total	**70**	**100**	**20**	**28.58**	**50**	**71.42**

Tables 5 and 6 show that the distribution items in the present test do not agree so closely with either Summer's or Garrett's scheme of distribution. But it should be noted here that the reason for contrast lies in the selection or rejection of items. The items of the pilot test have been rejected or retained for the final test not on the basis of their difficulty indices but on the basis of their bi-serial coefficient of correlation values. Items with the "r" at more than 0.20 have been selected for the final test, while items with the "r" at less than 0.20 have been rejected. Moreover, almost 55 items fall in the range between 20 and 93 "D." This much variation is adequate and acceptable for any good predictor test.

The items were further categorised as per the guidelines of Ebel (1979) for discriminating power, which are given in Table 7. Out of 70 items, 28 were excellent, while 9 were adequate. 13 items were found that needed improvement, whereas the remaining 20 items were found to be very poor and were completely eliminated.

Table 7

Distribution of items of pilot test based on Ebel's guidelines of discriminating power

Discriminating power	Items	Total	Remark
.40 and above	2, 3, 4, 10, 12, 14, 15, 17, 23, 25, 26, 27, 29, 32, 33, 34, 40, 43, 47, 49, 53, 55, 57, 61, 62, 64	28	Very good items
.30 to .39	5, 30, 32, 38, 44, 45, 48, 58, 63	9	Reasonably good items
.20 to .29	6, 11, 18, 20, 24, 35, 36, 37, 56, 66, 68, 69, 70	13	Need improvement
≤ .19	1, 7, 8, 9, 13, 19, 21, 22, 28, 39, 41, 42, 46, 50, 51, 52, 54, 59, 60, 65	20	Very poor items
Total	**70**		

Final IETAT

Based on the pilot testing, the final test has also continued to be in five sections. As against 15, 14, 13, 15, and 13 test items (making the total 70) of the five sections, respectively, of the pilot form, 10 items in each section (total 50) were retained in the final IETAT. The final version of the IETAT was translated into Gujarati and administered to 552 pre-service teachers in Gujarat, India. The reliability and validity of the IETAT were found to be 0.75 and 0.51, respectively. The test is intended to measure the teaching aptitude for inclusive education possessed by the pre-service teachers. In this way, the test anticipates the prospective teachers' future potentials and levels of capacity prior to their initial teacher training. The pre-service teachers with high aptitude identified through this IETAT will be most likely to acquire the skills and desired level of proficiency with a reasonable amount of training during their initial teacher training. Teachers with average and low aptitude levels should be provided more training on inclusion with practical exposure during their initial teacher training. This in turn will lead to preparing knowledgeable and skilled teachers for inclusive education and, to some extent, solve the problem of teacher shortage for inclusive education in India.

Table 8

Factor wise items in final IETAT

	Factor	Item Nos. in IETAT	No. of Items	% of Items
I.	Knowledge about inclusive education	1-10	10	20
II.	Perceived ability to identify disabilities	11-20	10	20
III.	Attitude towards teaching children with disabilities	21-30	10	20
IV.	Perceived ability to adapt inclusive teaching methods	31-40	10	20
V.	Skills to manage inclusive classroom	41-50	10	20
Total			**50 items**	**100**

Limitations

The main purpose of this pilot study was to assess the feasibility of IETAT and the validity of the items included in it. The pilot study of IETAT provided an opportunity to improve the test items. The pilot sample was confined to one teacher education institute only; hence, the data and findings were generated from one institution. This aspect may limit the generalizability of the findings, but looking at the similarity of the sample as possible to the target population, the result would not be very different from the large sample, subsequently reducing the threats to internal validity (Robichaud, 2016).

Conclusion

The pilot study undertaken to test the feasibility of the IETAT was vital for improving test validity and, subsequently, the usability of the test on a large sample. The planned procedures for test administration were also tested. The positive responses and relatively high response rate from pre-service teachers in the pilot confirmed the feasibility of administering the test to a larger sample using a standardised procedure, including time frame and instructions to be given. Thus, the pilot testing of IETAT helped the investigator receive experience in administering the test, knowing the ambiguity and deficiency

in some items, establishing rapport with the respondents, and standardising the instructions and time to be given while administering the final version of the test. This paper highlights the importance of pilot testing in terms of improving the test item validity, adds to the body of knowledge on pilot studies, and contributes to the development of test development.

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BOOK REVIEW

The Very Hungry Caterpillar

*Priyanka Koch**
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Illustrations are beautiful because they open a whole new world to the little children where every creativity finds expressions. It is like that by giving them books we are providing them a space for the open expressions of their thoughts. Use of illustrations in the early years is crucial. The scribble marks of children are never to be ignored. The books provided to children in the Foundational years need to be simple and should have the ability to illuminate young minds. Everything that the child sees in his immediate environment attracts his/her attention. They imitate a cartoon character in the T.V and also starts humming to the sounds that they hear around. This happens in the foundational years because children are involved in the process of observation. The contextualisation is also very much relevant when it comes to using the books in the foundational years. It is also one of the best ways through which children can be connected to nature and also for making them effective communicators.

The kind of books that we as parents and teachers can use to promote reading habits among young children often comes with so many challenges. Many a times we find it very difficult like when it comes to selection of the best books for our young minds. The best books that can inculcate the habit of reading among young children need to be colorful and full of illustrations. Often a single picture has an entire story hidden in it. This is the beauty of illustrated books. The NIPUN BHARAT document as part of a National Mission to promote Foundational Literacy and Numeracy among children in India has mentioned about promoting reading habits among young children. This necessitates organising certain activities that promotes reading habits by developing inclination towards reading coming in terms to the words being used in the books to depict characters. Knowing how to read is very essential. Also it has been mentioned in the NIPUN BHARAT document that mere reading is not sufficient,children need to be able to comprehend the text as well. Then only the whole idea behind promoting reading habits and developing inclination towards reading gets accomplished.

One such book that can be used to promote reading habits among children in the Foundational years is The Very Hungry Caterpillar. It is one of the most widely read book loved by children across the world. Let's understand the story of The Very Hungry Caterpillar. So nicely has Eric Carle written it. It is the story of a caterpillar which soon flutters to become a beautiful butterfly. Why The Very Hungry Caterpillar should be given to small children to read? This is because it would help them to increase their creativity, develop imagination and also for letting them have free flow of words and expressions which is an integral part of developing communication skills. The book is best suited for children as it has lovely illustrations which describes the caterpillar as it embarks its journey one day. As the days pass it eats different types of food and grows bigger and bigger. As a researcher working in the field of Foundational Learning this book is highly

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recommended for every teacher dealing with kids in the Foundational years as the illustrations like pears,moon, etc., can be used to explain several concepts of shapes and language to children along with numbers which definitely fulfills the demand of Foundational learning like helping children come in terms to the basic concepts of Literacy and Numeracy. The story line is kept very simple and beautiful. Also, it can be used to organise different classroom-based activities for children like making small groups and letting children perform different roles. This helps to develop healthy social habits and promotes team work. Values can also be developed among young children like helping them handle different situations in life where they face hurdles and lose patience and find it extremely difficult to get over those challenges. Towards the end of the story it has been shown that the caterpillar breaks free its cocoon to become a butterfly which is where the story ends. Children are so much attracted to colors and thus the book The Very Hungry Caterpillar is one of the best book that serves the purpose well by letting children have interest towards reading and is to be kept in the book corners of every school and used by teachers in the Foundational years. The parents can also tell the story to children as bed time story to lull them to sleep. Thus it would undoubtedly be a wonderful read.

AUTHOR DESCRIPTION

Eric Carle is an author who has written some of the most wonderful books. Illustrations define the books written by the author that are meant for children. The Very Hungry Caterpillar is one of his most widely