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Pedagogical Change for Developing Inclusive Class Room Practice in Science Learning
"In Light Of NEP-20"

Dr. Manisha Bajpai[1*]

[1*]*Principal SAM College, BU Bhopal, Email: drmanisha.edu@gmail.com, 9425607373*

***Corresponding Author:** Dr. Manisha Bajpai*

**Principal SAM College, BU Bhopal, Email: drmanisha.edu@gmail.com, 9425607373*

Article History	*Abstract*
Received: Revised: Accepted: **CC License** CC-BY-NC-SA 4.0	*National Education Policy of Government of India (NEP- 2020) provides valuable insights and recommendations on various aspects of education system that include move towards inclusive and holistic education, "The NEP 2020 is found on the five guiding pillars of Access, Equity, Quality, Affordability and Accountability".* It will prepare our youth to meet the diverse national and global challenges of the present and future. Inclusive education embraces the diversity of students. It acknowledges that every learner is unique, with varying strengths, challenges, learning styles, and cultural backgrounds. Inclusion aims to celebrate these differences and create an environment where all students feel valued and respected. The aim of NEP-20 is to construct learning situations that are approachable to all need and beneficial to achieve educational outcomes, and ultimately to a more equitable society. This paper is humble attempt to discuss the pedagogical change for inclusive classroom in light of recommendations of NEP-20. The paper tries to explore some factors of teaching pedagogy which could be fruitful for implementation of inclusive classroom in terms of equitable. **Keywords**: Pedagogical Change, Inclusive classroom, Science Learning & NEP-20

1.0 Introduction

The National Educational Policy (NEP), 2020 attempt to address the growing inequality and inequity plaguing country's education system (Mohan Kumar ,2021). The concept of inclusive education refers to an educational philosophy and practice that aims to provide all students, regardless of their diverse abilities, backgrounds, or needs, with equitable opportunities to learn and succeed. Inclusive education is based on the principles of diversity, equity, and social justice. They ensure that all students have the same educational opportunities, reducing disparities and ensure that no one is left behind. It acknowledges that every learner is unique, with varying strengths, challenges, learning styles, and cultural backgrounds. Inclusion aims to celebrate these differences and create an environment where all students feel valued and respected. In Inclusive classrooms all students are actively engage in the learning process. It goes beyond mere access to education; it ensures that students with diverse needs are actively involved and participate to the best of their abilities in all aspects of education. Inclusive classrooms provide the opportunity for students to learn in a supportive and diverse environment, fostering their development and preparing them for active participation in a pluralistic society. But in present scenario inclusive classroom, in reality cannot be transform without thought process, pedagogy and teaching skills. Rather approaches and methods used in inclusive settings should personalize learning through engagement with all the learners (Hart et al., 2004). Educators and mentors should actively implement pedagogical transformations that reflect and cater to diverse backgrounds, fostering an all-encompassing framework for the learning environment known as Universal Design. There is strong evidence of the potential of approaches that encourage cooperation between students for creating classroom conditions that can both maximize participation and the standard of learning for all students (Johnson and Johnson, 1989). In inclusive educational settings, teachers should continuously assess the impact of their teaching methods for inclusive class room , ensuring they have the insights and strategies to facilitate each student's individual learning journey.

2.0 Rationale

Inclusive classrooms reflect the realities of a diverse society. They prepare students to interact with individuals from different backgrounds and abilities, promoting understanding, empathy, and tolerance. The previous studies indicate that there are significant challenges and scope in Inclusive education in India due to huge diversity and inclusion. Hodkinson & Devarakonda (2009), were reported in their study there are 16 official languages, more than 314 spoken dialects, and 4 major religions. Singal (2006) and Sharma & Das (2015) enablement or disablement is another area of diversity in India. Bell and Stevenson (2006), Goyal and Pandey (2009), Sharma & Deppeler (2005), Singal (2009),they all were analyse Inclusive Education Policy in India in different-different aspects of education. Kalyanpur (2008) explains that, eventually this led to the Right to Education Act (RTE), in 2010, which supports inclusive education review of the history toward more inclusive education shows that there has been a slow but steady progression of legislation aimed at including all students in schools. However, this inclusion is complicated by multiple challenges such as India's diversity and size Dhurka Janani Srikantha(2017).Hodkinson and Devarakonda (2009) note that the term 'inclusive education' has no similar expression in Hindi, the national language of India, Vislie (2003) explains that the introduction of the Salamanca Statement was to provide a new educational policy designed to meet the diverse needs of all students in one school, According to NCERT (2006) stakeholders, including children with special educational

needs, voice that the curriculum is not relevant to them. Tilak (2000), Gopalkrishnan & Sharma (1998) explained the general curriculum and teaching practices may not be flexible enough to support inclusion. Also many research studies suggest that whatever little training they have been receiving falls short in making them competent and confident of themselves in helping such children. Therefore, no conclusions can be arrived at on the basis of previous researches in terms of pedagogical changes, hence some more researches are needed. The present study was conducted in keeping mind with the aim of reducing the gap between research and inclusive education in terms of science learning in Indian context.

3.0 The Need for Inclusive Classrooms Practice in India

Due to rich diversity in terms of Language, Cast, Geographic and physical, India is called "The Land of Diversity". Inclusive education seeks to eliminate discrimination and promote equal access to quality education for all students in India. It recognizes that every student has the right to an education without being excluded or marginalized based on characteristics such as disability, race, gender, socioeconomic status, or language. Inclusive education embraces the diversity of students. It acknowledges that every learner is unique, with varying strengths, challenges, learning styles, and cultural backgrounds. Inclusion aims to celebrate these differences and create an environment where all students feel valued and respected. Inclusive classroom, also can lead to improved academic and social outcomes for students with different ability and their peers. Students in inclusive classrooms often perform better academically and develop stronger social skills. It challenges educators to adapt their teaching methods and strategies to meet the diverse needs of their students. This can lead to continuous professional development and growth for teachers. Individualized support tailored to the unique needs of students. This targeted assistance helps struggling learners and challenges high-achieving students, fostering a more responsive and effective educational environment. Inclusive learning environment, actively engage all students in the learning process. It goes beyond mere access to education; it ensures that students with diverse needs are actively involved and participate to the best of their abilities in all aspects of schooling. Collaboration among educators, families, and support personnel to meet the diverse needs of students. It recognizes that students may require different types and levels of support and that this support should be tailored to their individual needs. In Indian context, Inclusive education is not limited to academic learning but also addresses the social and emotional development of students. It aims to foster positive peer relationships, self-esteem, and a sense of belonging for all learners. Inclusive classrooms make necessary modifications and accommodations to ensure that students can access the curriculum and demonstrate their learning. This may involve adjustments to teaching methods, materials, assessments, or the physical environment.

4.0 Dimensions of Inclusive Classroom in Indian Context

A grand synthesis of cultures, religions and languages of the people belonging to different castes and communities has upheld its unity and cohesiveness despite multiple foreign invasions. Inclusive classrooms are designed to accommodate a wide range of students with diverse needs, not limited to disability-related needs. Inclusion is about providing equitable educational opportunities for all students, recognizing and valuing their unique characteristics and backgrounds. Here we are try to discuss various types of inclusive classrooms in Indian context that extend beyond disability:

Geographical Inclusivity

The geography of India is one of diversity, spanning across an area of 3.28 million square kilometre, India is a vast country with great diversity of physical features like dry deserts, evergreen forests, lofty mountains, perennial and non-perennial river systems, long coasts and fertile plains. Various climatic conditions are experienced in India due to its various physical features. This helps break down stereotypes, reduces prejudice, and promotes the understanding of differences. Inclusion is not only about academic integration but also about social inclusion.

Linguistic Inclusivity

There are 28 states, 22 official languages, and 121 regional language (Boli) in India. Inclusive classrooms in India, is the road map of the celebrate cultural and linguistic diversity through education. They embrace students from various ethnic, racial, and linguistic backgrounds, creating a multicultural and multilingual learning environment. Inclusive practices may involve incorporating students' cultural perspectives into the curriculum and providing support for regional and Hindi language learners.

Cultural and Socioeconomic Inclusivity

India is a rainbow of culture. Cultural diversity reflects their regional beliefs and spiritual goals. NEP-20, implementation is the only way to understand and regards this vibrant inclusivity and aim to bridge socioeconomic gaps. Students from different culture and socioeconomic backgrounds should have equal access to quality education through implementation of NEP-20.This includes providing resources and support to students from economically disadvantaged families.

Gender and Gender Identity Inclusivity

Inclusive classrooms provide a safe and supportive environment for students of all gender identities. This includes creating gender-neutral spaces, respecting students' pronouns, and addressing issues related to gender discrimination and bullying.

Religious and Faith-Based Inclusivity

Inclusive classrooms respect the religious and faith-based beliefs of students. In Indian education system, avoid religious discrimination and ensure that students of different faiths can comfortably express their beliefs while maintaining a secular (*Panth Nirpekshya*) learning environment.

Mental Health and Emotional Inclusivity

Inclusive classrooms consider the mental health and emotional well-being of students. Educators may implement strategies to support students with anxiety, depression, or other mental health challenges and create a stigma-free environment.

Learning Style Inclusivity

Inclusive classrooms accommodate different learning styles, recognizing that students may have varied preferences for how they acquire and process information. Educators use a range of teaching strategies to address these differences.

5.0 Theoretical framework

Social constructivism, as developed by theorists like Lev Vygotsky, emphasizes the importance of social interactions in the learning process. In an inclusive classroom, this theory highlights the significance of collaborative learning, peer interactions, and the role of the teacher as a facilitator who scaffolds students' learning.

Inclusive classroom pedagogy is a fundamental approach to education that prioritizes the inclusion and equitable participation of all students, their individual abilities, backgrounds, or diverse needs. It is a multifaceted and evolving concept that emphasizes not only access but also active engagement and learning for every student. In a world characterized by increasing diversity and the recognition of the value of different perspectives, an inclusive classroom pedagogy is not just a progressive approach; it is a necessity for creating an educational environment that truly prepares students for the challenges and opportunities of the 21st century.

A fundamental principle of inclusive classroom pedagogy is the emphasis on high expectations for all students. Inclusivity does not mean lowering academic standards or modifying the curriculum to the point where it no longer challenges students. On the contrary, inclusive educators set ambitious goals for every learner, believing in their potential to achieve and excel. By setting high expectations and providing appropriate support, educators send a powerful message to their students that they are capable of meeting the challenges of rigorous academic content. Another crucial element of an inclusive classroom pedagogy is fostering peer relationships and promoting social integration. Students need opportunities to interact with their peers in meaningful ways. By encouraging students to work together, share experiences, and learn from another, educators can create a more harmonious and understanding classroom community.

At the core of a suggestive pedagogy for inclusive classroom is the belief that diversity, in all its forms, enriches the learning experience. Whether students differ in terms of their abilities, ethnic backgrounds, linguistic proficiencies, socio-economic status, gender identities, or any other dimension, they bring unique perspectives, strengths, and experiences to the classroom. Recognizing and celebrating this diversity is the first step in building an inclusive classroom. One of the key elements of an inclusive classroom pedagogy is the construction of a safe and welcoming learning environment. Inclusion is not just about admitting diverse students into a classroom; it's about ensuring that they feel valued, respected, and supported. This means educators need to be proactive in preventing discrimination, bullying, and bias. It also involves creating a classroom culture that promotes empathy, understanding, and acceptance. When students feel safe and appreciated, they are actively participated in their learning process. In present study, researcher had tried to unfold the aspects of pedagogical changes for inclusive classroom of science learning.

6.0 Pedagogical Change in inclusive classroom of science learning

In the Indian educational landscape, the National Education Policy 2020 (NEP-20) heralds a transformative vision for inclusive classrooms, particularly in the realm of science learning. Integrating principles from educational psychology into pedagogical practices becomes imperative within this context. Pedagogical change stands as the cornerstone for fostering an inclusive environment where diverse learners thrive. By embracing varied teaching methodologies like cooperative learning, differentiated instruction, and experiential learning, educators can accommodate different learning styles, abilities, and cultural backgrounds, nurturing a more inclusive science classroom. Incorporating NEP-20's emphasis on multidisciplinary approaches and critical thinking, pedagogical shifts empower students to explore scientific concepts beyond rote memorization,

fostering curiosity and deeper understanding. Moreover, this approach instills a sense of ownership and engagement among students, encouraging active participation and collaborative problem-solving.

In the Indian context, where educational disparities exist, embracing pedagogical change aligned with NEP-20 is instrumental in democratizing science education. By promoting inclusivity through varied pedagogical strategies, educators lay the foundation for a more equitable and enriching learning experience in science for all learners.

A theoretical framework for pedagogical change in inclusive classrooms of science learning provides the foundation and guiding principles for understanding, designing, and implementing effective pedagogical strategies. It draws from educational theories and concepts that help educators create an inclusive learning environment that accommodates the diverse needs and abilities of all students. Here is a theoretical and conceptual framework that can inform pedagogical change for inclusive classrooms:

Inclusive classroom pedagogy is not a **one-size-fits-all model** (Manisha Bajpai 2020), it is a dynamic and adaptable approach that recognizes the individuality of each student and the unique context of each classroom. Educators must continuously assess and adjust their practices to ensure that they are meeting the evolving needs of their students. This flexibility is essential for creating an inclusive environment that truly reflects the principles of diversity, equity, and excellence in education.

Pedagogical approaches in inclusive classrooms are critical for creating an environment where all students, regardless of their abilities, backgrounds, or diverse needs, can learn effectively. These approaches are designed to cater to the diverse learning styles and needs of students and promote an equitable and inclusive learning experience. Here are some key pedagogical approach and their comparison, which are commonly used in inclusive classrooms for science learning .

Differentiated Instruction:

Differentiated instruction is a fundamental pedagogical approach in inclusive classrooms for science learning. It involves tailoring teaching methods, materials, and assessment to meet the individual needs and abilities of each student. Teachers may adapt content, pace, and activities to accommodate various learning styles, levels, and preferences.

Universal Design for Learning (UDL):

UDL is a framework that provides multiple means of representation, engagement, and expression in the curriculum. This approach ensures that students with diverse needs have flexible options to access and engage with the content. It promotes the use of varied teaching methods, multimedia resources, and interactive activities to support all learners.

Collaborative Learning:

NEP-20 promotes, Collaborative learning. It encourages students to work together in small groups or pairs to solve problems, complete projects, or discuss topics. It fosters peer interaction and can be particularly beneficial for students with disabilities, as they can learn from their peers and develop social skills.

Inquiry-Based Learning:

Inquiry-based learning is a student-cantered approach that encourages critical thinking and problem-solving. In an inclusive classroom, it can be modified to suit the diverse needs of students, allowing them to explore topics that interest them while promoting a deeper understanding of the subject matter.

Project-Based Learning:

Project-based learning involves students working on extended projects that address real-world problems or challenges. It encourages independent and group work, allowing students to demonstrate their learning in a variety of ways, which accommodates diverse abilities and learning styles.

Table 1.1 Comparison of different Pedagogical Approach

Approach	Differentiated Instruction	Universal Design for Learning	Collaborative Learning	Inquiry-Based Learning
Focus	Enhance teaching to diverse student needs	Designing flexible learning environments	Group work, fostering teamwork	Encouraging curiosity, exploration, and investigation
Goal	Addressing individual learning styles, abilities, and interests	Providing multiple means of engagement, representation, and expression	Promoting teamwork, social skills, and shared learning	Cultivating critical thinking, problem-solving, and investigation skills
Teaching Methodologies	Varied materials, pacing, and assessments based on student needs	Flexible curriculum, diverse instructional methods	Group discussions, projects, peer learning	Hands-on experiments, questioning, and discovery
Benefits	Personalized learning, increased engagement, and understanding	Accessibility, inclusivity, and increased participation	Collaboration, diverse perspectives, and enhanced communication	Curiosity, deeper understanding, and Problem Solving skill development
Application in Science	Adapting content delivery for different learning styles	Providing multiple ways to access scientific content	Team-based investigations, sharing findings, Group Projects	Active exploration, experimentation, Innovation inquiry and Science Process Skills
Key Considerations	Identification of individual student needs	Creating diverse learning opportunities	Building effective teamwork and communication	Encouraging curiosity and exploration

7.0 Conclusion and Suggestions

Pedagogical changes in Inclusive classroom in science learning also necessitates a commitment to ongoing professional development. Educators need to continuously update their teaching skills to meet the diverse need of their students. This might involve attending workshops, collaborating with colleagues, or seeking out resources that help them stay informed about best practices in inclusive education. In an ever-changing educational landscape, teachers must be lifelong learners to effectively implement an inclusive classroom pedagogy.

Sensitivity to students' individual needs is another significant aspect of inclusive pedagogy. This requires educators to differentiate instruction to accommodate various learning styles and abilities. Educators should work closely with support staff, specialists, and parents to ensure that all students receive the necessary support and accommodations. This collaborative effort is critical in identifying and addressing the unique learning needs of each student. Effective communication and teamwork among all stakeholders can create a powerful network of support that empowers every student to succeed. The use of technology can greatly enhance the inclusivity of the classroom. Assistive technologies, for instance, can be indispensable tools for students with disabilities, helping them access and engage with the curriculum more effectively. Moreover, Blended and flipped learning can facilitate personalized learning, allowing students to progress at their own pace and explore topics that interest them. In an inclusive classroom, technology can be a valuable equalizer, helping to bridge gaps in learning and accessibility.

Adapting curriculum and materials to be culturally responsive is another dimension of pedagogical change for inclusive classroom. Educators should strive to include diverse perspectives and content that reflects the varied backgrounds of their students. This approach not only makes learning more relevant and engaging but also validates the cultural identities of students, fostering a sense of pride and belonging. Inclusive classrooms are those where students see themselves reflected in the curriculum and feel that their experiences are acknowledged and respected.

The role of assessment in an inclusive classroom cannot be overlooked. Traditional forms of assessment often present barriers to students with diverse needs. Inclusive pedagogy requires rethinking how students are assessed and evaluated. Educators should use a variety of assessment methods, including formative and performance-based assessments, to provide a more accurate picture of student progress. This approach allows students to demonstrate their learning in ways that align with their individual strengths and abilities, reducing the impact of potential barriers. Promoting self-advocacy is a critical aspect of inclusive classroom pedagogy. Students should be encouraged to express their needs, preferences, and aspirations. They should be taught to self-advocate and seek the support they require, developing essential skills for their academic and personal lives. This empowerment fosters independence and resilience, ensuring that students are better equipped to navigate the challenges they may encounter in their educational journey and beyond.

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