Inclusive Education Innovation: Building Learning Spaces for All

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ABSTRACT

Inclusive education is a strategic approach to ensuring justice and equity in educational access for all learners, including those with special needs. This article aims to explore various innovations in inclusive education practices, both theoretical and practical, with a focus on global, national, and local contexts—particularly in North Sumatra, Indonesia. The study draws on developmental theories (Bronfenbrenner, Piaget, Vygotsky), constructivism (Bruner), Universal Design for Learning (UDL), and social justice frameworks to analyze effective strategies for creating adaptive and participatory learning environments. Findings indicate that although Indonesia has inclusive education policies in place, challenges such as the shortage of special education teachers, limited disability-friendly infrastructure, and low public awareness continue to hinder implementation. A case study in North Sumatra reveals that regulations like Regional Regulation No. 29 of 2016 provide a legal foundation, yet practical application still requires strengthened human resources and adequate facilities. Therefore, cross-sector collaboration and continuous innovation are essential to realizing truly inclusive learning spaces for all students.

Keyword: Inclusive Education; Innovation; Special Needs; Social Justice; North Sumatra

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1. INTRODUCTION

Inclusive education is a strategic approach to realizing social justice and human rights in the field of education. This concept emphasizes the importance of providing a learning environment that is welcoming and adaptive for all students, regardless of their physical, intellectual, social, economic, or cultural differences (Efendi et al., 2022). However, global realities show that access to inclusive education remains a significant challenge (Aminulloh et al., 2024).

Globally, approximately 240 million children with disabilities face barriers in accessing quality education (Marfu'ah et al., 2024). These children are often marginalized in educational policies, experience discrimination, and lack adequate support (UNESCO, 2020). In low- and middle-income countries, more than 50% of children with disabilities do not receive proper education (UNESCO, 2020).

Children of school age who should be receiving education are denied this right due to various factors, including geographical constraints, family economic conditions, limited educational facilities, and unequal access to education—challenges that are particularly acute in developing countries.

In Indonesia, efforts to implement inclusive education have shown notable progress (Mellymayanti et al., 2024). According to the Ministry of Education and Culture, as of December 2023, there were 40,164 schools admitting students with disabilities. Nevertheless, significant challenges remain, especially regarding the availability of qualified human resources and supportive infrastructure (Melinda et al., 2024; Simanjuntak et al., 2023). Only about 14.83% of inclusive schools are adequately equipped to support students with special needs (Kemendikbud, 2023).

North Sumatra has demonstrated a strong commitment to inclusive education (Turnip et al., 2025). In 2015, the province was officially declared an inclusive education region. The Provincial Government issued Regulation No. 29 of 2016 concerning the Implementation of Inclusive Education in North Sumatra (Nuradi, 2016), which serves as the legal foundation for inclusive education practices in the region.

The provincial government has made various efforts to improve the quality of inclusive education, including teacher training, provision of accessible facilities, and raising public awareness. However, substantial challenges remain in ensuring that all students with special needs receive appropriate education (Dianastiti et al., 2024; Kinanthi et al., 2024).

One of the primary challenges is the lack of understanding and awareness about inclusive education among the public. Many parents and teachers still do not fully comprehend the importance and benefits of inclusive education (Kaltsum et al., 2024). Moreover, stigma and discrimination against children with special needs continue to persist (Sowiyah & Perdana, 2022). Supporting facilities in inclusive schools in North Sumatra remain inadequate in various aspects, ranging from physical infrastructure to learning tools (Navas-Bonilla et al., 2025). Many schools lack basic accessibility features such as wheelchair ramps, special toilets, or resource rooms designed for students with disabilities (Wulandary & Harsiwi, 2024). Additionally, there is a significant shortage of assistive learning devices such as braille books, customized teaching aids, or assistive technologies (Bahri, 2022).

Given these challenges, innovation in inclusive education is urgently needed to address existing barriers (Kinanthi et al., 2024; Rilci et al., 2024). Innovations may include the development of adaptive curricula, continuous teacher training, the use of technology to support learning, and collaborative efforts among governments, schools, communities, and the private sector (Efendi et al., 2022). In this way, inclusive education can move beyond a mere slogan and become a tangible reality in daily educational practices (Nadhiroh & Ahmadi, 2024).

This article aims to examine various innovations in inclusive education from both theoretical and practical perspectives, while also highlighting current relevant phenomena. It is hoped that this study will contribute to the ongoing efforts to build inclusive and adaptive learning spaces for all students.

2. LITERATURE REVIEW

Inclusive education is grounded in several major theoretical frameworks, including those developed by Bronfenbrenner, Piaget, Bruner, and Vygotsky.

1. Bronfenbrenner's Ecological Theory, The ecological theory developed by Bronfenbrenner (1979) emphasizes that individual development is influenced by interactions between the individual and their social environment (Susilawati et al., 2023; Tong & An, 2024). In the context of inclusive education, this approach highlights the importance of understanding the multiple layers of environmental influence on students' learning, from family and school environments to national policies. Research by Susilawati et al. (2023) demonstrates that the success of inclusive education implementation is significantly affected by the inclusive culture present in society and educational institutions.

2. Piaget's Theory of Cognitive Development, Jean Piaget (1971) proposed that children's cognitive development occurs through a series of stages shaped by their interactions with the environment (Agustyaningrum et al., 2022; Pakpahan & Saragih, 2022). In inclusive education, understanding these developmental stages is essential for designing curricula and learning strategies tailored to the needs and abilities of individual learners. This aligns with the findings of Susilawati et al. (2023), who emphasize the importance of curriculum adaptation based on each student's individual development.

3. Bruner's Constructivist Learning Theory, Jerome Bruner (1961) argued that learning is an active process in which students construct new knowledge based on prior experiences and existing knowledge (Angraini et al., 2023). In the context of inclusive education, the constructivist approach encourages the use of teaching strategies that actively engage students in the learning process, such as discussions, projects, and problem-based learning. This approach fosters a responsive learning environment that accommodates the diverse needs of all students, including those with special needs.

4. Universal Design for Learning (UDL), UDL is an educational framework aimed at enhancing accessibility and participation for all learners. It emphasizes the provision of multiple means of representing information, expressing knowledge, and engaging learners (Al-Azawei et al., 2017). According to Rose and Meyer (2002), applying UDL principles can help eliminate learning barriers and support the success of inclusive education. Although the implementation of UDL in Indonesia still faces challenges, several studies highlight its positive potential in increasing the participation of students with special needs.

5. Vygotsky's Sociocultural Theory, Lev Vygotsky emphasized the role of social and cultural interactions in cognitive development (Agustyaningrum et al., 2022). His concept of the Zone of Proximal Development (ZPD) suggests that learning is most effective when students receive support

to reach a higher level of understanding through guidance from adults or peers (Vygotsky et al., 1978). In inclusive education, this theory underpins the use of cooperative learning and mentoring strategies to help students with special needs achieve their fullest potential.

6. Booth and Ainscow's Theory of Inclusive Education, Booth and Ainscow (2002) developed the *Index for Inclusion*, a tool designed to help schools evaluate and improve their inclusive practices (Novoa et al., 2024). The index consists of three main dimensions: inclusive culture, inclusive policies, and inclusive practices. The implementation of this index has proven effective in assisting schools to identify areas in need of improvement to better support inclusive education. In Indonesia, some schools have begun adopting this framework to enhance the quality of inclusive education.

7. Wehmeyer's Self-Determination Theory, Michael Wehmeyer formulated the theory of self-determination, which emphasizes the importance of providing students with opportunities to make decisions and exercise control over important aspects of their lives. Within inclusive education, this approach advocates for the empowerment of students with special needs to become active agents in their learning process. Research has shown that increased self-determination is positively correlated with better educational outcomes and overall quality of life for individuals with disabilities.

8. Social Justice Theory in Education, The theory of social justice in education highlights the necessity of equitable access to educational resources for all individuals, regardless of their social, economic, or disability status. This approach calls for the elimination of structural and cultural barriers that hinder the full participation of students with special needs in the educational system. Effective implementation of inclusive education requires a strong commitment to social justice through inclusive policies, practices, and school culture.

9. Intersectionality Theory in Inclusive Education, Intersectionality is a framework that considers how various aspects of an individual's identity—such as race, gender, social class, and disability—interact and influence their experiences within social systems, including education. In the context of inclusive education, an intersectional approach helps to understand the complexity of challenges faced by students with special needs who also belong to other marginalized or minority groups. This framework encourages the development of more holistic and culturally responsive strategies that recognize the diversity of student experiences.

10. Inclusive Leadership in Education, Inclusive leadership in education emphasizes the role of school leaders in fostering a culture and environment that supports the participation of all students. Inclusive leaders are responsible for setting a vision of inclusion, developing supportive policies, and ensuring the implementation of inclusive practices throughout the school. Research indicates that strong and committed leadership is a key factor in the successful implementation of inclusive education.

By integrating these various theoretical perspectives, inclusive education can be more effectively designed and implemented to meet the diverse needs of all learners. A holistic, theory-driven approach allows for the development of responsive strategies that address individual diversity and sociocultural contexts, ultimately creating truly inclusive and adaptive learning environments.

3.   RESEARCH METHOD

This study employs a qualitative approach using library research methods to explore in depth various theories, policies, and practices related to inclusive education. The primary data sources consist of scholarly articles, reports from international organizations such as UNESCO and UNICEF, national and regional policy documents, and relevant prior research. Data analysis was conducted through content analysis by identifying key themes related to innovations in inclusive education, both theoretical and practical. The theoretical frameworks used include Bronfenbrenner's ecological theory, Piaget's cognitive development theory, Bruner's constructivist theory, Vygotsky's sociocultural theory, the Universal Design for Learning (UDL), as well as theories of social justice, intersectionality, and inclusive leadership. In addition, case studies of inclusive education implementation in Indonesia—particularly in North Sumatra Province—were analyzed to illustrate the application of these concepts in a local context. This method was selected to provide a comprehensive and reflective overview of the challenges and innovative opportunities in building genuinely inclusive learning environments.

4.   RESULTS AND DISCUSSION

At the international level, countries such as Finland and Japan have successfully implemented inclusive education with adaptive systems.

A. *Implementation of Inclusive Education at the International Level*

Inclusive education has become a global agenda promoted by various international organizations, such as UNESCO and UNICEF. UNICEF emphasizes that inclusive education is the most effective way to provide equitable opportunities for all children to attend school, learn, and develop the skills they need to thrive. Several countries have adopted innovative approaches to implement inclusive education:

- Finland: The country is known for its strong inclusive education system, in which nearly all children—including those with special needs—study in regular classrooms. Less than 2% of children with disabilities attend special schools, demonstrating Finland's firm commitment to inclusion.
- Senegal: Some schools in Senegal have begun integrating deaf and hard-of-hearing students with their hearing peers. Although there is no national strategy for inclusive education yet, these efforts indicate promising steps toward inclusion.
- Nigeria: The Winford Centre for Children and Women in Lagos supports children with autism, ADHD, and other developmental disabilities through education, advocacy, and welfare services. The organization also collaborates with UNESCO and the British Council to promote inclusive education.

B. *Implementation of Inclusive Education in Indonesia*

In Indonesia, inclusive education has been regulated by several policies, including the Ministry of Education and Culture Regulation No. 70 of 2009 concerning Inclusive Education for Students with Disabilities and/or Gifted and Talented Students. However, its implementation still faces several challenges, such as:

- Curriculum Adaptation: Curricula in inclusive schools must be modified to accommodate the needs of students with special needs. Unfortunately, many schools have not yet made optimal adjustments.
- Human Resource Limitations: A significant number of teachers lack specialized training to effectively support students with special needs, leading to less effective teaching and learning processes.
- Inadequate Support Facilities: Many schools still lack disability-friendly facilities, such as accessible infrastructure and appropriate learning aids.

Despite these challenges, some regions have made notable progress. For example, the city of Surabaya has developed an inclusive education program involving parental and teacher consultations, as well as systematic observation, identification, and assessment of students' conditions.

C. *Implementation of Inclusive Education in North Sumatra*

North Sumatra declared itself an inclusive education province in 2015. The Provincial Government issued Regulation No. 29 of 2016 concerning the Implementation of Inclusive Education in North Sumatra, providing a legal foundation for the inclusive education framework in the region. However, the implementation continues to face significant challenges:

- Lack of Qualified Educators: There is still a shortage of special education teachers (GPK) with the necessary competencies to support students with special needs.
- School Readiness: Many schools are not yet adequately prepared in terms of infrastructure or management systems to implement inclusive programs.
- Facilities and Infrastructure: Limited access to assistive learning devices and physical accessibility remains a major constraint.

To address these challenges, the Education Quality Assurance Agency (Balai Penjaminan Mutu Pendidikan, BPMP) of North Sumatra has conducted advocacy programs on the tiered implementation of inclusive education. These initiatives aim to enhance the awareness and capacity of stakeholders in supporting inclusive education practices.

D. *Creating Learning Spaces for All*

Creating learning spaces for all means establishing an inclusive educational environment where every student—regardless of background or ability—has equal opportunities to learn and thrive. To achieve this goal, several key strategies can be implemented:

- Developing an Inclusive Curriculum: The curriculum should be designed to accommodate the diverse needs of all learners, including those with special needs. This involves adapting learning materials, teaching methods, and assessment practices to be more flexible and responsive.
- Teacher Training: Educators must receive specialized training to understand and implement inclusive teaching strategies. Such training should cover knowledge of different types of disabilities, effective instructional techniques, and the use of assistive tools in the classroom.

- Provision of Disability-Friendly Facilities: Schools must be equipped with facilities that support the needs of students with disabilities, including accessible infrastructure, learning aids, and assistive technologies.
- Collaboration with Parents and Communities: Engaging parents and communities in the educational process can foster a supportive and inclusive learning environment for all students.
- Utilization of Technology: Technology can play a critical role in inclusive education by offering adaptive learning software, communication tools, and digital resources tailored to various learning needs.

By implementing these strategies, it is expected that truly inclusive learning environments can be realized—spaces where every student feels valued, supported, and empowered to reach their full potential.

5. CONCLUSION

Inclusive education is, at its core, a learning ecosystem that creates space for all—not merely a rhetorical ideal. It is not only a pedagogical approach but also a reflection of a moral and social commitment to educational justice. Grounded in developmental theories (Bronfenbrenner, Piaget, Vygotsky), constructivist pedagogy (Bruner), universal design principles (Rose & Meyer), and the concepts of social justice and inclusive leadership, inclusive education—designed for all, including children with special needs—can be realized through targeted and systematic innovation.

Globally, countries such as Finland and Japan have demonstrated that education systems can operate inclusively without marginalizing anyone. At the national level, Indonesia has established a legal framework to support inclusive education, yet implementation remains challenged by issues such as teacher preparedness, infrastructure gaps, and school culture. Regionally, North Sumatra has adopted concrete policies, such as Governor Regulation No. 29 of 2016, though its practical application still requires reinforcement of human resources and facilities. Locally, various schools and institutions are beginning to take initiative, but sustained outcomes will depend on ongoing support and cross-sector collaboration.

"Building learning spaces for all" entails embedding principles of openness, participation, and support across all dimensions of education—curriculum, pedagogy, assessment, management, and school culture. It is not merely about accommodating students with disabilities, but about ensuring the rights of all learners to access meaningful and dignified educational experiences.

In conclusion, innovative inclusive education cannot be achieved without synergy between theory and practice, policy and implementation, and idealism and on-the-ground realities. Therefore, the active involvement of all stakeholders—government, educators, parents, communities, and the private sector—is essential in the collective effort to make schools true homes of learning for all.

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