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Assessing the Implementation of Inclusive Education in Indonesia through Neurodiversity Framework & Identifying Support for Teachers in Teaching Neurodivergent Students

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ABSTRACT

Education is a human right for every child; however, neurodivergent students often face limited access to education. Neurodiversity-informed inclusive education is essential for equitable learning; however, its implementation in a classroom setting remains underexplored. This study explores how Indonesian primary school teachers understand the neurodiversity framework and implement it in inclusive education practices, and what support is needed to improve inclusive education teaching practices. 12 teachers from mainstream, inclusive, and special education schools across five regions in Indonesia participated in semi-structured interviews. The data was analysed using Braun and Clarke (2022) Reflective Thematic Analysis. The finding revealed three major themes: teachers understanding and attitudes towards the neurodiversity framework, current teaching strategies and programs for neurodivergent students, and supports required by teachers to enhance inclusive education practices. The findings showed that the majority of participants are unfamiliar with neurodiversity terms; however, they have a strong awareness to support neurodivergent students. There are two learning supports that teachers provide: 1) curriculum differentiation includes Individual Educational Programs (IEPs), visual learning media, and differentiation assessments and feedback, and 2) teacher-parent regular meetings. In addition, participants highlighted the need for continuous practice-oriented professional development, multi-stakeholder collaboration, improved learning facilities, and support for teacher wellbeing. This study contributes to improvement in inclusive education settings not only in Indonesia but also around the globe by identifying context-specific barriers and support needed by inclusive education classroom teachers, highlighting the need to bridge policy into the enhancement of practice. Overall, the findings from this study hold significant insights for policymakers, school leaders, educators and program designers to enhance inclusive education practices.

KEYWORDS

Inclusive education, neurodiversity, neurodivergent students, teacher support, Indonesia

Introduction

Education is a fundamental human right for every child (United Nations, 1989). However, children with neurodevelopmental differences continue to face negative stigma, marginalisation, and unequal access to quality education (Kamila & Gulati, 2023; Nadeau et al., 2020). Neurodevelopmental disorder (NDD) is a broad range of conditions, including autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), learning disabilities, cerebral palsy, epilepsy, intellectual disability, and sensory impairments that can affect cognitive, motor, and social functioning (Bitta et al., 2017; World Health Organization [WHO], 2019). These conditions have significant implications for educational participation, development, and social interactions.

In response to the limitations of deficit-based understandings of disability, the neurodiversity paradigm

has emerged as an alternative framework. Rather than pathologising neurological differences, it frames those conditions as natural human variations (Morris et al., 2025; Sonuga-Barke, 2023). This perspective emphasises rights, strengths, and identities, shifting the focus from remediation towards recognition and minimising barriers. Despite its growing international recognition, the neurodiversity framework remains the subject of considerable debate, both in terms of its conceptual clarity and its practical application in education settings. The following sections will examine these debates, explore inclusive education practices in Indonesia, and identify gaps in the current research.

Neurodiversity Framework and Inclusive Education

The neurodiversity movement is increasingly shaping educational practice by promoting strengths-based approaches that frame neurological differences as natural human variations rather than deficits requiring remediation (Sewell & Park, 2021; Acevedo & Nusbaum, 2020). This paradigm shift challenges the pathologizing frameworks and deficit-based discourses traditionally associated with special education, instead advocating for inclusive pedagogies that position neurological diversity as an equity imperative (Acevedo & Nusbaum, 2020).

Despite this momentum, implementation remains challenging. Teachers often struggle to translate emerging neurodiversity framework into practical classroom strategies, highlighting the need for models that integrate research evidence with contextualized teaching practices (Sewell & Park, 2021). Furthermore, neurodivergent students, particularly those with autism and ADHD, experience systemic barriers and injustices that create accessibility and inclusivity challenges within learning environments and curricula (Butcher & Lane, 2024). The movement's success depends on developing pedagogies that move beyond person-fixing framework toward approaches that recognize and cultivate the strengths of all learners (Acevedo & Nusbaum, 2020).

These challenges are especially pronounced in low- and middle-income countries, where limited resources, cultural perceptions of disability, and insufficient specialist services persist. In such contexts, inclusive education policies often remain rhetorical, lacking the necessary investment in teacher training, infrastructure, and systemic reform to ensure meaningful change (Houting, 2018; Oehme et al., 2023). As a result, the paradigm risks remaining symbolic rather than transformative. These debates underscore both the promise and the limitations of neurodiversity as a guiding principle for inclusive education in resource-constrained contexts.

Nevertheless, neurodiversity frameworks offer an important complement to inclusive education by reframing neurological differences as valued dimensions of human diversity (Acevedo & Nusbaum, 2020; Chrysochoou et al., 2022). Inclusive education aims to ensure equitable participation for all learners, regardless of ability or background (Acevedo & Nusbaum, 2020; Rodríguez et al., 2024). While inclusive education often emphasizes accommodations and supports, neurodiversity perspectives advocate for systemic redesign that creates learning environments inherently affirming of diverse cognitive development. This raises critical questions concerning teacher competency, curriculum reform, and resource allocation. Examining how these two frameworks align and diverge provides a foundation for analysing their implications within the Indonesian context.

Inclusive Education in Indonesia

Indonesia has formally committed to inclusive education under Law No. 8 of 2016 on Persons with Disabilities and Regulation No. 70 of 2009 of the Ministry of National Education (Indrasti & Jalil, 2019). The number of inclusive schools expanded dramatically from 3,610 in 2015 to 28,778 in 2020 (Ministry of Education and Culture [MoEC], 2021). However, quantitative growth has not translated into qualitative improvement. Children with disabilities complete on average only 4.7 years of schooling, with just 54% finishing primary education compared with 95% of their peers (UNICEF, 2020). Teacher quality is also a major concern: as of 2021, only 12.6% of inclusive schools had trained teachers (Hata et al., 2021). Consequently, many children continue to face exclusion or insufficient support (Indriyany, 2015).

These systemic gaps underscore the urgency of contextually grounded strategies to strengthen inclusive education practice. This context illustrates why Indonesian teachers' perspectives on neurodiversity

framework are vital for understanding the realities of inclusive education implementation.

Supporting Neurodivergent Learners

Research highlights both pedagogical and socio-emotional dimensions of support as essential to the success of neurodivergent learners. On the pedagogical side, curriculum differentiation, flexible teaching methods, and strengths-based Individualised Education Programmes (IEPs) can foster academic progress and self-determination (Seong et al., 2014; Clark et al., 2019). The use of visual learning media and differentiated assessments further enhances engagement, particularly for learners with communication challenges (Bourke & Mentis, 2014; Joseph, 2020; Irwandy et al., 2021). However, these strategies require substantial teacher expertise and institutional support, which remain inconsistent across many Indonesian schools.

In addition, socio-emotional support is equally critical. Studies indicate that acceptance, social networks, and coping strategies significantly shape outcomes for neurodivergent learners (Claassens & Lessing, 2015). Psychological services, mentoring, and peer-support programmes show promise, though the existing evidence is modest and often limited to short-term effects (McDowall & Kiseleva, 2024; Fotheringham et al., 2023). Moreover, current research faces limitations regarding long-term impacts and is still influenced by deficit-based interpretations of behaviours such as dysregulation (Goodall et al., 2022). These findings underscore the need for approaches that holistically integrate academic, social, and emotional dimensions of support within inclusive education.

Supporting Educators to Enhance Inclusive Practice

Teachers play a pivotal role in implementing inclusive education. Current research showed that the importance of ongoing professional development, collaboration with colleagues and parents, access to adequate facilities, and support for teachers' wellbeing (Chow, 2022; Kabwos & Bitok, 2022; Olagunju et al., 2020). However, in Indonesia and similar contexts, these supports are often absent. Large class sizes, limited training opportunities, and resource constraints hinder teachers' ability to apply inclusive strategies effectively.

Moreover, much of the literature emphasises policy recommendations without adequately examining teachers' lived experiences in developing countries. This gap restricts understanding of the practical challenges educators face and how global guidelines might align or oppose with developing countries. Foregrounding teachers' perspectives on neurodiversity framework is therefore critical to identifying contextually relevant strategies for inclusive practice in Indonesia.

Purpose of the Present Study

This study examines how Indonesian teachers understand and apply the neurodiversity framework within inclusive education. It explores teacher understanding of neurodiversity and attitudes of neurodivergent learners, how these shape classroom practice, and what supports they identify as necessary. In doing so, the study contributes to international debates while generating context-specific insights to inform teacher training, school support systems, and inclusive education policy in Indonesia. This purpose frames the study as both locally grounded and globally relevant.

Method

This study is situated within the interpretivist research paradigm, which posits the existence of multiple, socially constructed realities (Creswell & Creswell, 2018). This paradigm aligns with the central aim of the study: to understand teachers' experiences of inclusive education through the lens of neurodiversity. Consistent with this philosophical stance, a qualitative research design was adopted, as it facilitates the exploration and interpretation of the individuals' meanings attach to their experiences and social realities.

In addition, a phenomenological methodology was employed to explore participants' lived experiences in depth. Phenomenology enables the uncovering of the essence of experiences, and the meanings participants attribute to them, making it particularly suited to research that prioritises personal perspectives (Adams, 2015; DeJonckheere & Vaughn, 2019). Semi-structured interviews were chosen as the primary data collection method, as they balance structure with flexibility and allow participants to introduce topics meaningful to their

experiences.

Sample

The study involved 12 primary school teachers from five regions in Indonesia, including mainstream, inclusive, and special education schools. Eligibility required participants to be actively employed as class teachers in primary school. Recruitment occurred in April and May 2023 using purposive and snowball sampling. Teachers were approached via digital recruitment posters circulated on social media and through professional networks. Participants completed a Qualtrics form including an information sheet, consent form, demographic information and eligibility criteria.

The sample size of twelve teachers was selected to balance methodological rigor and practical considerations. Participants were recruited from Java and Kalimantan, two of Indonesia's most populous and culturally significant regions. In qualitative research, six to twelve interviews typically provide sufficient depth to identify patterns (Braun & Clarke, 2022; Guest et al., 2006), and code saturation will be reached after nine interviews (Hennink et al., 2017). While this sample allows insight into teachers' perspectives on neurodiversity within these regions, findings are not intended to represent all teachers across Indonesia.

Instrument

A semi-structured interview guide was developed around three domains: (1) teachers' understanding and attitudes toward neurodiversity, (2) classroom strategies for supporting neurodivergent students, and (3) supports needed to enhance inclusive practice. Open-ended questions encouraged participants to elaborate freely, enhancing data richness and credibility (Creswell & Creswell, 2018).

Procedure

Interviews were conducted via Zoom during June and July 2023 to reduce geographical barriers and improve accessibility (Upadhyay & Lipkovich, 2020; Oliffe et al., 2021). Participants received notification one week in advance. Each interview lasted approximately 60 minutes, a duration appropriate to obtain meaningful insights while minimising fatigue (Adams, 2015; Jamshed, 2014). Interviews were audio-recorded with consent and transcribed using an intelligent verbatim method that preserved meaning while removing fillers and repetitions (McMullin, 2021; Thorne, 2020). Participants were assigned unique identifiers (P1–P12) to ensure confidentiality.

Reflexivity

Reflexivity was integral to the research. The researcher, a postgraduate student with prior teaching experience in Indonesia, recognised that familiarity with the educational context could both facilitate rapport and introduce bias. A reflexive journal documented assumptions, decisions, and emotional responses throughout data collection and analysis. Peer debriefing with supervisors provided additional critical reflection, enhancing transparency and rigor.

Data Analysis

The interviews were audio-recorded and transcribed verbatim to ensure the accuracy of the data. The transcription allowed a textual representation of the data, making it easier to identify key themes and patterns for the analysis of the data.

After the transcription, the data were analysed using Reflexive Thematic Analysis (RTA) following Braun and Clarke's (2022) six-phase process, chosen for its flexibility and emphasis on the researcher's interpretive role. The process involved: familiarisation with transcripts, inductive coding of semantic content, generation of candidate themes, review and refinement of themes, definition and naming of themes, and producing the final report supported by illustrative quotations. Reflexivity was maintained throughout, and interpretations were cross-checked with supervisors to reduce potential bias.

Ethics

Ethical approval was granted by the Department of Education, University of York, England.

Participants provided informed consent, and confidentiality was ensured through anonymisation and secure data storage.

Results

This section will provide an overview of the key findings that emerged from teachers lived experiences of teaching an inclusive classroom in Indonesian primary schools. Three overarching themes were identified: (1) teachers' understandings and attitudes towards the neurodiversity framework, (2) current strategies to support neurodivergent students, and (3) supports required by teachers to enhance inclusive education practices. Participant demographics are summarised in Table 1.

Table 1
Characteristics of Study Participants

Characteristics	%	n
Gender		
Male	0%	0
Female	100%	12
Educational Background		
Undergraduate	58%	7
Postgraduate	42%	5
Types of school		
Mainstream School	25%	3
Inclusive School	42%	5
Special Education School	33%	4
Length of teaching experience		
1 – 5 years	58%	7
6 – 10 years	17%	2
11 – 15 years	8%	1
More than 15 years	17%	2
School locations		
Jakarta	8%	1
West Java	42%	5
Central Java	17%	2
East Java	25%	3
East Kalimantan	8%	1

Note. This table demonstrates the demographic characteristics of the participants. The number has been rounded to the nearest integer for readability. The geographical location that participants provided in the demographic information request form has been grouped into geographical regions of Indonesia.

Theme 1: Teachers' Understandings and Attitudes towards the Neurodiversity Framework

This theme examines participants' understandings of the neurodiversity framework and their attitudes towards providing tailored interventions for neurodivergent students.

Subtheme 1.1: Understanding of the Neurodiversity Framework

Most participants reported limited familiarity with the neurodiversity framework, particularly those without formal education and training in special education. Teachers often described neurodiversity in broad terms, equating it with “brain diversity” and associating it with conditions such as autism spectrum disorder (ASD) and attention-deficit hyperactivity disorder (ADHD).

P2: I never heard of neurodiversity before, but when I Googled it, I saw it relates to the brain and diversity, like ADHD, autism, and other learning difficulties.

On the other hand, participants with an education background in special education demonstrated a broader understanding, recognising neurodiversity as an approach that emphasises differences rather than deficits. Despite this, several acknowledged that their knowledge remained largely theoretical and not fully applicable in classroom practice.

Subtheme 1.2: Attitudes towards the Neurodiversity Framework

Although most participants had limited knowledge of neurodiversity, they expressed positive attitudes towards supporting neurodivergent students. Collaboration with professionals was considered essential for developing effective interventions:

P1: It is essential to give specific intervention to students with learning disabilities... but as a teacher, I can only observe students' conditions without giving diagnoses or knowing the specific interventions needed. I need to collaborate with psychologists and psychiatrists to diagnose students and provide specific teaching strategies.

These findings indicate that teachers, despite limited theoretical knowledge of neurodiversity and neurodevelopmental disorders, were strongly committed to providing tailored support. However, limited access to professionals constrained the implementation of specific learning strategies.

Theme 2: Support Strategies Currently Provided

This theme explores teaching strategies and programmes currently implemented to support neurodivergent learners. Strategies varied across schools, influenced by institutional support, funding, and the knowledge of teachers and parents regarding students' needs.

Subtheme 2.1: Curriculum Differentiation

Some participants adapted the curriculum through Individualised Education Programmes (IEPs), small-group instruction with support from Special Educational Needs (SEN) teachers, visual learning media, and differentiated assessments. However, the availability and quality of these supports differed across schools, reflecting variations in facilities, professional collaboration, classroom staffing, and teachers' expertise:

P12: I cannot give specific learning strategies for students with special needs because I have to teach the whole class by myself. I worry that students with special needs cannot get enough support they require due to limitations in educators.

P7: Students can be assessed using different types of assessment, such as oral, behavioural, motor assessments, etc. We assess not only academic ability but also the students' holistic development.

Subtheme 2.2: Collaboration with Parents

Participants emphasised the importance of working closely with parents to foster consistent learning habits and support neurodivergent learners. Some schools held regular parent meetings and monthly training sessions with professionals, addressing emotional regulation, learning routines, and holistic well-being. These initiatives aimed to enhance parental knowledge, align parenting with school strategies, and promote child development beyond academics. However, not all schools were able to implement such programmes, and the frequency and quality of the programmes varied according to institutional support and funding:

P10: There are parenting programmes for parents of children with special needs. They are held every three months to discuss student progress and possible collaborative interventions at school and home.

Theme 3: Supports Required by Teachers

This theme examines the supports teachers need to enhance inclusive education practices. Four key areas were identified: professional development, collaboration, learning facilities, and teacher well-being.

Subtheme 3.1: Continuous Professional Development

Participants highlighted the importance of continuous professional development in ensuring high-quality education for all learners. They emphasised the need to strengthen observational skills to identify students with special needs and to design targeted teaching strategies. Many also acknowledged their own limitations, particularly the lack of formal training in special education or psychology.

P5: I need ongoing teacher training from psychologists to better understand the characteristics of students with special needs and to learn appropriate interventions and learning strategies. One week of continuous training per semester would be sufficient, preferably conducted during school holidays.

Participants further noted that existing training programs were often overly theoretical and lacked direct applicability to classroom contexts. Administrative barriers also limited access to government-provided courses. They therefore stressed the need for teacher training that is practical, classroom-focused, and accessible to all teachers, regardless of teacher's years of experience or employment status.

Subtheme 3.2: Collaboration with Educators, Professionals, Parents and Government

Participants emphasised that inclusive education depends on coordinated efforts among multiple stakeholders. They reported the need to collaborate with psychologists and psychiatrists to determine appropriate interventions, while special educational needs (SEN) teachers were considered essential for classroom management. Collaboration with parents was viewed as critical for ensuring consistency of interventions between school and home, particularly in supporting the development of habitual learning routines. Participants also underscored the importance of government collaboration to secure funding and adequate facilities for inclusive education.

P3: Teaching strategies and habit development are unlikely to be effective without collaboration with parents. For instance, when students with special needs are encouraged to take responsibility for their daily tasks at school, progress may be delayed if parents continue to complete these tasks at home without fostering the same independence. In such cases, developing consistent daily habits becomes more challenging.

Subtheme 3.3: Enhancement of Learning Facilities

Participants reported that resources and facilities for neurodivergent learners were often insufficient, particularly in mainstream schools. Although regulations require mainstream schools to enrol students with special needs, most lack Special Educational Needs (SEN) teachers or teacher assistants to support homeroom teachers. Class sizes typically range from 20 to 30 students, making classroom management particularly challenging without additional support. In contrast, special schools highlighted the need for specialised tools, such as sensory integration and occupational therapy equipment.

P1: Many mainstream schools do not have enough facilities to provide for students with ADHD; however, government regulations still require us to accept students with ADHD.

Subtheme 3.4: Teacher Well-being

Participants emphasised the importance of supporting teachers' mental health. Teaching in inclusive classrooms requires sustained patience and involves multiple responsibilities, including lesson planning, material preparation, parental communication, and managing students' behaviour. To maintain their well-being, participants highlighted the need for recreational activities and effective workload management strategies:

P4: As a teacher, I have emotional and patience limits when dealing with students with special needs. I need mental health support and stress relief, such as spending time in nature once a month, because managing challenging behaviours every day is truly draining.

Discussion

The present study analysed inclusive education practice in Indonesia through a neurodiversity framework. The findings indicated that most participants were unfamiliar with the neurodiversity, often associating it narrowly with conditions such as autism, ADHD, and learning disorders. This aligns with international research showing that teachers frequently adopt deficit-based conceptualisations of neurodiversity rather than recognising it as natural human variation (Cook, 2024; Lalvani, 2012). Collectively, these findings highlight the urgent need for continuous, practice-oriented professional development especially in neurodiversity-informed pedagogy.

Despite limited familiarity with the framework, teachers displayed positive attitudes towards supporting neurodivergent learners. This challenges the assumption that attitudes are necessarily shaped by knowledge and contributes to teaching practice in inclusive education settings (Alsarawi & Sukonthaman, 2021; Jones et al., 2018). Teachers demonstrated awareness through their willingness to collaborate with psychologists and families; however, limited collaboration access constrained their ability to provide tailored teaching strategies. In practice, teachers reported using visual learning supports, curriculum differentiation, and assessment modifications; This finding consistent with global literature advocating multi-modal pedagogy and differentiated assessment (Bourke & Mentis, 2014; Irwandy et al., 2021; Sperotto, 2016; Tai et al., 2022). However, only a minority implemented these consistently due to insufficient institutional support, lack of specialised staff, and inadequate resources, reflecting a mismatch between national policy mandates (MoEC, 2021) and classroom realities.

In addition, Parent–teacher collaboration also emerged as an important support strategy for neurodivergent students, echoing international evidence on the role of family engagement in inclusive education (Nurfadhillah et al., 2022; Peter, 2025). Nevertheless, variation in school protocols and resources resulted in inconsistent practices. Therefore, developing national guidelines for structured parent–school collaboration would promote and achieve effective collaboration.

Furthermore, the finding showed that there are four critical areas requiring support to enhance inclusive education practices: professional development, collaboration, facilities, and well-being. First, continuous professional development is essential for building reflective and inclusive teaching competencies, particularly in a context where only 12.6% of inclusive schools have trained teachers (Hata et al., 2021). Second, collaboration with parents, professionals, and government sectors is vital, however, limited multidisciplinary coordination undermines its effectiveness (Chow, 2022). Third, appropriate facilities and resources are necessary to support individualised learning, especially in mainstream schools with large class sizes (Kabwos & Bitok, 2022; Pautina et al., 2020). Finally, teachers highlighted the emotional demands of inclusive teaching, underscoring the importance of well-being support to reduce burnout, including workload regulation, counselling services, and peer support programmes (Olagunju et al., 2020; MacLean & Law, 2022).

Implications for Policy and Practice

The study has several implications. At a policy level, inclusive education in Indonesia requires more than regulatory mandates; it demands parallel investments in teacher training, interdisciplinary collaboration, and school infrastructure to ensure policies are transformative rather than symbolic (Houting, 2018; Oehme et al., 2023). Teacher education programmes should embed neurodiversity-informed pedagogy, strengths-based approaches, and practical classroom strategies, complemented by inclusive education experts, psychologists and psychiatrists to bridge theory and practice. At the school level, sustainable interventions must account for resource constraints. Low-cost, scalable strategies such as peer mentoring, community-based support groups, and visual learning materials offer feasible alternatives to resource-intensive models from high-income countries.

Limitations

The study has several limitations. It was geographically limited to primary schools in Java and

Kalimantan, which may restrict generalisability to other regions with differing cultural and institutional contexts. Cultural perceptions of disability may have influenced participants' responses, introducing potential bias. Additionally, qualitative methods provide rich insights into teacher perspectives but do not allow causal inferences. Finally, reliance on self-reported data may not fully reflect actual classroom practices.

Recommendations for Future Research

Future research should explore inclusive education across diverse Indonesian regions, including rural and under-represented provinces. Comparative studies with other low- and middle-income countries would contextualise findings within broader international debates. Longitudinal studies are needed to assess the sustainability of interventions and their long-term impact on both student outcomes and teacher well-being. Research should also evaluate the effectiveness of scalable, low-cost interventions tailored to resource-constrained contexts.

Conclusion

This study demonstrates both the potential and complexity of implementing the neurodiversity paradigm in Indonesian inclusive education. While teachers show strong awareness of supporting neurodivergent learners, structural barriers such as limited continuous training, insufficient resources, and constrained interdisciplinary collaboration hinder effective practice. These findings emphasise the need for teacher education that integrates neurodiversity-informed competencies, sustainable professional development, and culturally responsive approaches addressing local understandings of disability and stigma. Aligning policy with actionable strategies and prioritising scalable, context-specific interventions can support meaningful inclusion, contributing to a nuanced understanding of inclusive education in low- and middle-income countries and enabling equitable participation for neurodivergent learners.

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