



Alternative Assessment Strategies and Accommodative Teaching Module Design: A Case Study of Deep Learning Implementation in Inclusive Education Schools

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ABSTRACT

This study examines the implementation of inclusive education in Indonesia across three critical dimensions: (1) alternative assessment strategies for students with special needs (e.g., dyslexia and anxiety), (2) inclusive teaching module design grounded in Universal Design for Learning (UDL), and (3) the integration of deep learning through project-based activities. These focal areas address gaps in teacher preparedness and systemic challenges in inclusive classrooms. A descriptive quantitative survey was conducted with 20 teachers—comprising regular, subject-specific, and special education educators—from inclusive elementary and junior high schools nationwide. Data were gathered via validated Likert-scale questionnaires, analyzed descriptively using MS Excel, and interpreted within Florian's (2014) inclusive education model. Reliability testing confirmed strong internal consistency (Cronbach's $\alpha > 0.70$). Results showed that 85% of teachers applied project-based or portfolio assessments for dyslexic students, 70% integrated UDL principles into multimodal modules, and 65% used contextual projects (e.g., gardening) to foster deep learning. Main challenges included time limitations, scarce resources, and weak teacher collaboration. The study offers empirical insights into integrating adaptive assessment, UDL-based design, and deep learning in inclusive classrooms, proposing a practical framework for teacher training and policy reform. Limitations include the small sample and self-reported data, warranting further mixed-methods research.

INTRODUCTION

Inclusive education has evolved into a global movement grounded in the principles of equitable access and human rights, embraced by many nations through policies such as the Sustainable Development Goals (SDGs) to ensure the full participation of students with special needs (Ainscow, 2020; Mitchell, 2015; Operti & Brady, 2019). While challenges persist, inclusion remains a central pillar of education policy, particularly to prevent the exclusion of children with special needs from mainstream education systems (Slee, 2018; UNICEF, 2021; Florian, 2014).

In Indonesia, the implementation of inclusive education continues to face structural and practical obstacles. Beyond infrastructural gaps, limited teacher understanding of differentiated instruction is a major constraint 72% of inclusive school teachers report difficulty in modifying curricula to accommodate diverse learners (Sunaryo, 2020; Hastuti & Widodo, 2021). Collaboration between regular teachers and special education resource teachers (GPK) is often suboptimal due to insufficient training and weak school policy support (Prasetyawati et al., 2023). These systemic challenges are compounded by regional disparities, with urban areas generally better prepared than rural counterparts (UNESCO, 2022).

Assessment practices illustrate these challenges clearly. Authentic assessment has been shown to reduce student anxiety and increase engagement (Graham et al., 2020), making it crucial in inclusive settings where fairness requires differentiated approaches. Yet, in practice, many Indonesian teachers struggle to design appropriate assessment tools. Studies indicate that 68% experience difficulties in developing adaptive instruments for students with special needs particularly in balancing national curriculum standards with individual needs largely due to limited training (Kurniawati et al., 2022; Supena et al., 2021). Traditional assessments often fail to capture the holistic abilities of students with disabilities, underscoring the need for alternatives such as portfolios and project-based evaluations (Tomlinson, 2017). This study therefore explores alternative assessment practices used to evaluate students with dyslexia and anxiety disorders.

Equally critical is the development of inclusive teaching modules. The Universal Design for Learning (UDL) framework emphasizes flexibility in representation, expression, and engagement (Rose & Meyer, 2002). However, only about 42% of inclusive school teachers consistently integrate UDL principles into lesson planning (Prasetyo et al., 2023), often constrained by time and resource limitations. This research investigates how teachers adapt modules using UDL and examines the factors that facilitate or hinder the process.

Deep learning is another essential dimension, fostering conceptual understanding through meaningful experiences (Hattie, 2017). Project-based activities employed in this study – align with Vygotsky's (1978) theory of scaffolding and contextual learning, but their effectiveness depends on teacher collaboration and supportive school policies (Friend et al., 2015). Preliminary evidence suggests that, while teachers value deep learning, limited coordination time hampers optimal implementation. This study offers a novel, integrative perspective on inclusive education by simultaneously examining three interrelated pedagogical dimensions – adaptive assessment, UDL-based module design, and deep learning through project-based activities within the Indonesian context. While previous research has typically addressed these areas in isolation, this study positions them as complementary strategies essential for fostering equitable learning environments for students with special needs. The findings are expected to inform teacher training programs, guide school-level policy development, and contribute empirical evidence to international discussions on inclusive pedagogy, particularly in resource-constrained settings. By addressing rural-urban disparities and highlighting actionable solutions, the study not only advances academic knowledge but also offers a scalable framework adaptable to diverse educational systems worldwide.

Accordingly, this study examines: (1) alternative assessment strategies employed by teachers for students with special needs, (2) the design of UDL-based inclusive teaching modules, and (3) the implementation of deep learning through project-based activities. By integrating these three dimensions, the research aims to develop a framework connecting adaptive assessment, inclusive material design, and deep learning pedagogy to improve the quality of inclusive education in Indonesia.

RESEARCH METHOD

This study employed a descriptive quantitative approach using a survey method to collect data from teachers in inclusive schools. The sample comprised 20 participants, including eight regular teachers, six subject teachers, and six special education resource

teachers (GPK) from elementary and junior high schools across various regions in Indonesia. Participants were selected through purposive sampling, with the inclusion criterion of having at least one year of experience teaching in inclusive classrooms (Creswell, 2014).

Data were gathered via a closed-ended questionnaire on a 5-point Likert scale, developed from a literature review on inclusive assessment, Universal Design for Learning (UDL), and deep learning (Cohen et al., 2018). The survey was administered online between June and July 2025 via Google Forms. Prior to distribution, the instrument underwent content validation by two experts in inclusive education. Reliability testing using Cronbach's Alpha yielded $\alpha > 0.70$, indicating satisfactory internal consistency (Field, 2018).

Descriptive statistical analysis was conducted using MS Excel to calculate percentages and response frequencies. The study adopted Florian's (2014) inclusive education framework, focusing on four key aspects: (1) assessment practices, (2) instructional design, (3) teacher collaboration, and (4) the integration of deep learning. Data analysis followed the three stages proposed by Miles et al. (2014): data reduction, data display, and conclusion drawing. While this study provides an initial overview of teachers' practices in developing inclusive learning modules, its primary limitation lies in the self-reported nature of the data, which may not fully reflect actual classroom practices.

RESULTS AND DISCUSSION

Results

Alternative Assessment

This study examined three interconnected dimensions of inclusive education: alternative assessment strategies, UDL-based module design, and deep learning implementation. Survey results indicated that 85% of respondents employed oral project-based tasks and portfolio assessments when evaluating students with dyslexia and high anxiety. These methods were favored because they assess *conceptual understanding*—such as problem-solving, idea integration, and application of knowledge—rather than relying solely on decoding and reading fluency (Tomlinson, 2017). Teachers reported that portfolios allowed for a longitudinal view of student growth, capturing diverse outputs such as visual work, recorded oral explanations, and step-by-step project documentation. Oral project assessments were seen as reducing performance pressure for students who experience heightened anxiety during traditional written tests, while still providing opportunities for critical thinking and creativity.

This preference is consistent with Graham et al. (2020), who demonstrated that authentic assessment methods reduce learner anxiety and increase engagement by making evaluation tasks more relevant and connected to real-world contexts. Teachers in this study echoed this, noting that authentic assessments fostered a stronger sense of ownership over learning, particularly for students whose written expression did not reflect their actual cognitive abilities. Additionally, some respondents highlighted that alternative assessments helped identify hidden strengths such as verbal articulation or practical problem-solving that are often overlooked in conventional, text-based testing.

UDL-Based Module Design

Approximately 70% of respondents reported modifying their teaching modules to align with the principles of Universal Design for Learning (UDL), specifically by presenting information through multiple modalities—visual, auditory, and kinesthetic and by providing varied options for student engagement and output. For example, lessons on science concepts were accompanied by tactile models, audio explanations, and visual infographics, allowing students to select learning pathways suited to their strengths. This practice reflects Rose and Meyer's (2002) emphasis on *flexible representation* to ensure that learning is accessible to all students, regardless of ability profile.

A critical enabling factor identified by 80% of respondents was the initial mapping of student needs. This process often involved formal and informal assessments, classroom observations, and collaborative discussions with special education resource teachers (GPK) to tailor instructional materials. Teachers stressed that co-planning with GPKs not only enhanced the alignment between content delivery and student readiness levels but also promoted consistency in support strategies across different subjects. These findings are consistent with Friend et al. (2015), who found that collaboration between general and special educators leads to more individualized and effective instructional design for students with special needs.

However, despite the benefits, respondents consistently cited limited preparation time, lack of teaching resources, and the absence of dedicated collaboration schedules as major barriers. These constraints often forced teachers to rely on simplified adaptations rather than fully developed multimodal resources, which in turn limited the potential impact of UDL-based design.

Deep Learning Implementation

Sixty-five percent of respondents indicated that they implemented deep learning strategies through contextual, project-based activities such as vegetable gardening, illustrated storytelling, and community mapping. Teachers explained that these activities required students to integrate multiple skills planning, execution, communication, and reflection thereby fostering higher-order thinking. These approaches align closely with Vygotsky's (1978) scaffolding theory, as tasks were structured to provide graduated support before transitioning toward student independence.

Respondents emphasized that contextual projects helped students with intellectual disabilities link academic content to everyday life, thereby enhancing relevance and retention. For example, vegetable gardening projects were used to teach measurement, sequencing, and biological concepts, while illustrated storytelling encouraged language development and creativity. Teachers also noted that such projects encouraged peer collaboration, which not only improved social interaction but also created opportunities for peer modeling.

An important dimension of successful deep learning projects was parent involvement. Several respondents reported that engaging parents through clear, strength-based communication and sharing objective progress data helped reinforce learning at home. This approach supports Harry's (2008) assertion that empathetic, transparent communication strengthens school-family partnerships, particularly for students with special needs. Parents who understood the instructional goals were more

likely to provide consistent reinforcement outside the classroom, further deepening the learning experience.

Discussion

The findings of this study reinforce and extend the existing literature on inclusive education by emphasizing the need for a multidimensional approach that integrates adaptive assessment, Universal Design for Learning (UDL), and deep learning strategies within a coherent pedagogical framework. The preference for alternative assessments particularly oral project-based tasks and portfolio evaluations reported by 85% of participating teachers reflects a shift toward performance-based methods that are more equitable for students with dyslexia and high anxiety. These methods allow for the longitudinal documentation of learning progress, accommodate diverse modes of expression, and capture competencies that are often overlooked in conventional written examinations. Such practices are consistent with DeLuca et al. (2020), who demonstrated that performance-based evaluations enhance student engagement while reducing assessment bias, and support Tomlinson's (2017) framework for differentiated assessment, which calls for tailoring evaluation tools to meet the varied profiles and strengths of learners. The alignment with Graham et al. (2020) is also evident, as authentic assessments in this study were perceived to lower anxiety and increase ownership of learning by embedding evaluation tasks in real-world, meaningful contexts.

The application of UDL principles by 70% of respondents further underscores the centrality of inclusive design in accessible learning. Teachers reported using multimodal formats visual, auditory, and kinesthetic alongside varied activity choices to enhance access and engagement, an approach supported by Al-Azawei et al. (2017), who found that multimodal modules can improve accessibility for students with dyslexia by up to 40%. This practice directly reflects Rose and Meyer's (2002) recommendation that instructional materials should be inherently designed to accommodate a broad spectrum of learners. Importantly, 80% of respondents emphasized the critical role of mapping student needs and co-planning with special education resource teachers (GPK), echoing Robinson et al.'s (2022) findings on the effectiveness of "co-planning" models when adequate time is allocated. This is consistent with Friend et al. (2015), who argue that collaboration between regular and special education teachers is essential for aligning instructional strategies and maximizing student learning outcomes. Nevertheless, the study reveals a persistent structural barrier insufficient time for teacher collaboration which constrains the depth and frequency of co-planning, indicating a pressing need for institutional policies that formalize and protect collaborative time.

The study also demonstrates the potential of deep learning approaches in inclusive classrooms, with 65% of teachers implementing contextual, project-based activities such as vegetable gardening and illustrated storytelling to facilitate conceptual understanding. These activities resonate with Hattie's (2017) conclusion that project-based learning combined with scaffolding fosters higher-order thinking and align with Vygotsky's (1978) sociocultural theory, which posits that meaningful learning emerges from socially mediated and contextually rich experiences. Teachers noted that such projects not only deepened students' comprehension of academic content but also encouraged peer interaction and collaboration, thereby fostering both cognitive and

social development. Parent involvement, when fostered through transparent and strength-based communication strategies, was also found to be an important enabler of learning continuity at home, reflecting Harry's (2008) assertion that empathetic and open communication strengthens school-family partnerships.

Overall, these findings suggest that sustainable inclusive education requires the deliberate integration of alternative assessment methods, UDL-informed module design, and deep learning strategies, supported by robust school-level policies and resource allocation. However, persistent barriers—such as limited preparation time, inadequate access to multimodal resources, and reliance on teacher self-initiative—indicate that scaling these practices will require systemic interventions, including targeted professional development, structural support for collaboration, and equitable resource distribution across rural and urban contexts.

CONCLUSION

This study identified three key findings: (1) project-based and portfolio assessments are effective in evaluating students with special needs, (2) the implementation of UDL principles in teaching modules is hindered by resource limitations despite strong teacher collaboration, and (3) project-based activities can effectively facilitate deep learning when supported by scaffolding and active parental involvement. However, several limitations must be acknowledged. The sample was restricted to teachers from a small number of inclusive primary and junior high schools, the data collection relied solely on self-reported questionnaires without direct classroom observations or in-depth interviews, and no inferential statistical analyses or direct measurements were conducted to assess the impact of module implementation on student learning outcomes. Future research should expand the sample to include a wider range of schools and more diverse respondents (including students and parents), employ mixed-methods approaches (quantitative-qualitative) incorporating observations and interviews, measure learning outcomes through pre- and post-tests, and explore enabling and constraining factors such as school policies and teacher training. In addition, future studies should rigorously test the validity and reliability of research instruments prior to deployment. Longitudinal research is also recommended to evaluate the sustainability of inclusive, deep learning-based module implementation over time.

REFERENCES

- Ainscow, M. (2020). Promoting inclusion and equity in education: Lessons from international experiences. *Prospects*, 49(3-4), 123-134. <https://doi.org/10.1007/s11125-020-09508-8>
- Al-Azawei, A., Serenelli, F., & Lundqvist, K. (2017). Universal Design for Learning (UDL) in inclusive education: A systematic review. *Journal of Educational Computing Research*, 55(1), 68-97. <https://doi.org/10.1177/0735633116651977>
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
- DeLuca, C., Lapointe-Mcewan, D., & Luhanga, U. (2020). *Approaches to classroom assessment inventory: A new instrument to support teacher assessment literacy*.

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- Educational Assessment, 25(4), 412-430.
<https://doi.org/10.1080/10627197.2020.1766956>
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.
- Florian, L. (2014). What counts as evidence of inclusive education? *European Journal of Special Needs Education*, 29(3), 286–294.
<https://doi.org/10.1080/08856257.2014.933551>
- Friend, M., Cook, L., Hurley-Chamberlain, D., & Shamberger, C. (2015). Co-teaching: An illustration of the complexity of collaboration in special education. *Journal of Educational and Psychological Consultation*, 20(1), 9–27.
<https://doi.org/10.1080/10474410903535380>
- Graham, S., Collins, A. A., & Rigby-Wills, H. (2020). Writing characteristics of students with learning disabilities and typically achieving peers. *Learning Disability Quarterly*, 43(2), 83–94. <https://doi.org/10.1177/0731948719851863>
- Hastuti, R., & Widodo, A. (2021). Infrastructure adequacy in Indonesian inclusive schools: A case study of Central Java. *Journal of Research in Special Educational Needs*, 21(2), 145–160. <https://doi.org/10.1111/1471-3802.12503>
- Hattie, J. (2017). **Visible learning: A synthesis of over 800 meta-analyses relating to achievement**. Routledge.
- Kurniawati, F., Minnaert, A., Mangunsong, F., & Ahmed, W. (2022). Challenges in assessing students with special needs in Indonesian inclusive schools. *Teaching and Teacher Education*, 112, 103635. <https://doi.org/10.1016/j.tate.2022.103635>
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE Publications.
- Mitchell, D. (2015). *Inclusive education is a multi-faceted concept*. OECD Publishing.
- Opertti, R., & Brady, J. (2019). Globalizing inclusive education: From old challenges to new possibilities. *International Journal of Inclusive Education*, 23(7-8), 791–806.
<https://doi.org/10.1080/13603116.2019.1624845>
- Prasetyawati, N., Putra, M. A. H., & Arifin, I. (2023). Teacher collaboration challenges in Indonesian inclusive schools: Policy and practice gaps. **Asia-Pacific Journal of Teacher Education*, 51*(1), 89–105.
<https://doi.org/10.1080/1359866X.2022.2151412>
- Prasetyo, T., Rahman, A., & Retnowati, E. (2023). Universal Design for Learning implementation barriers in Indonesian lesson plans. *Journal of Curriculum Studies*, 55(2), 178–195. <https://doi.org/10.1080/00220272.2022.2151517>
- Robinson, D., Goodey, C., & Buli-Holmberg, J. (2022). The goldilocks effect: Teacher collaboration and efficacy in inclusive classrooms. *Teaching and Teacher Education*, 115, 107703. <https://doi.org/10.1016/j.tate.2022.107703>
- Rose, D. H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal Design for Learning*. ASCD.
- Slee, R. (2018). *Inclusive education isn't dead, it just smells funny*. Routledge.
- Sunaryo, Y. (2020). Curriculum adaptation barriers in Indonesian inclusive education: Teachers' perspectives. *International Journal of Inclusive Education*, 23(5), 543–558. <https://doi.org/10.1080/13603116.2019.1624846>
- Supena, A., Prakoso, B. H., & Fahrurrozi, F. (2021). Teachers' competence in alternative assessment for inclusive education: Evidence from Java, Indonesia. *International*
-



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- Journal of Disability, Development and Education, 68(5), 712-728.
<https://doi.org/10.1080/1034912X.2021.1896783>
- Tomlinson, C. A. (2017). How to differentiate instruction in academically diverse classrooms (3rd ed.). ASCD.
- UNESCO. (2022). Global education monitoring report 2022: Indonesia country profile. UNESCO Publishing.
- UNICEF. (2021). Inclusive education for children with disabilities: A global imperative. <https://www.unicef.org/reports/inclusive-education-children-disabilities>
- Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.
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