

Inclusive English Learning For Students With Disabilities: Challenges And Solutions In The Digital Age

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Abstract

Inclusive English language learning in the digital era has strategic urgency because it functions not only as a means of global communication but also as a gateway to equal education, employment, and social participation for students with disabilities. However, its implementation still faces various obstacles, ranging from pedagogical limitations of teachers, a lack of assistive technology infrastructure, to low digital literacy. This situation is further complicated by social stigma and gaps in technology access that widen inequalities. Although digital technology offers opportunities through features such as speech-to-text, screen readers, and interactive media, their utilization is often suboptimal due to limited resources and teacher preparedness. This study uses a qualitative approach with a literature review method to examine the challenges and solutions for inclusive English language learning. The analysis was conducted thematically by reviewing relevant academic literature from 2015–2025. The results of the study indicate that inclusive English language learning requires systemic transformation that includes strengthening teacher capacity, providing disability-friendly technology, improving infrastructure, and creating a stigma-free school culture. The principles of Universal Design for Learning (UDL) are recommended as a curriculum framework that ensures equal access for all learners from the outset. Thus, true inclusivity can only be realized through sustained pedagogical, technological, and policy integration.

Keywords: Inclusivity; Digital Literacy; English Language Learning.

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Introduction

English language learning in the era of globalization holds a strategic position as a foundation for cross-cultural communication skills and access to international knowledge sources. English is no longer a stand-alone subject but rather a bridge connecting students to the increasingly integrated academic, economic, and technological worlds. Within the framework of inclusive education, English plays a vital role because this skill enables students with disabilities to obtain equal opportunities in higher education, employment, and social participation. This concept aligns with UNESCO's (2020) view, which emphasizes that access to a global language is one indicator of the achievement of equitable inclusive education. Therefore, the implementation of inclusive English language learning can no longer be considered an optional option but rather a necessity in modern education systems. Awareness of this urgency has prompted various countries, including Indonesia, to review pedagogical practices to be



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more responsive to the diversity of learners (Nugroho et al., 2025). Therefore, this issue needs to be understood not only as an academic demand but also as a social and humanitarian agenda.

Despite growing recognition of its urgency, the implementation of inclusive English language learning still faces significant challenges. Teachers, as the spearhead of the learning process, are often not equipped with adequate pedagogical skills to design responsive learning strategies to the needs of diverse students. Students with disabilities such as blindness, deafness, or dyslexia require a more contextual approach, both in terms of methods, media, and evaluation. Teachers' inability to adapt learning strategies often results in a rigid learning process that is not aligned with the students' actual conditions. This has implications for the competency achievement gap between regular students and students with disabilities, which could be minimized through an inclusive approach. In line with Martiningsih (2023), inclusivity demands flexible, collaborative, and individual-centered pedagogy. Therefore, increasing teacher capacity through specialized training is a crucial agenda to support the effectiveness of inclusive education. Without adequate pedagogical preparedness, the inclusive vision is difficult to realize in daily classroom practice.

In addition to limited teacher competency, barriers also arise from infrastructure and learning environments that do not fully support inclusive principles. Many schools still lack disability-friendly learning facilities such as screen reader software, text-to-speech technology, or visual materials specifically designed for students with visual impairments. These barriers are further exacerbated by limited financial resources, particularly in schools with lower-middle incomes. As a result, access to inclusive learning resources is increasingly unequal between schools with strong financial support and those with limited resources. This situation highlights the significant gap between the normative vision of inclusive education and actual practice. According to the WHO (2011), the availability of assistive technology is a crucial factor in achieving equal access to education. With the unequal distribution of infrastructure, students with disabilities are vulnerable to being marginalized in the learning process. This situation demands more decisive and targeted policy interventions.

In line with this, the development of digital technology actually offers new opportunities to overcome some of the barriers faced in inclusive English learning. Artificial intelligence-based applications, online learning platforms, and interactive media with assistive features provide flexibility for students with disabilities in accessing learning materials. For example, speech-to-text technology makes it easier for deaf students to understand conversations, while screen readers help blind students read text. The presence of these digital technologies provides the possibility for learning to be more adaptive to the unique needs of each student. However, this potential cannot be fully realized without digital literacy readiness from both teachers and students. According to Pratama & Husadani (2025), technology must be seen as an instrument of empowerment, not simply a technical aid. Therefore, mastery of digital technology is a key factor in ensuring effective inclusivity. At this point, technological opportunities must be accompanied by adequate human resource readiness.

However, it is important to recognize that the enormous potential of digital technology also faces a significant gap in access. Not all schools or students have adequate facilities and devices to use assistive technology in English learning. Economic barriers, infrastructure distribution, and limited policy support exacerbate these inequalities. Many learning applications or platforms are still not fully designed with universal accessibility principles in mind, making it difficult for students with certain disabilities. Abduraxmanova (2025) emphasized that the adoption of educational technology must always be accompanied by an accessibility evaluation to prevent new forms of exclusion. This means that technology that should support inclusivity can actually create gaps if not managed properly. Therefore, this access challenge needs to be a primary focus of the education policy agenda. Addressing the technology gap is as important as designing new innovations.

In addition to technical aspects, the social dimension also plays a crucial role in supporting or hindering inclusive English learning. Students with disabilities often face stigma, stereotypes, and discrimination in the school environment. This impacts their low self-confidence and motivation in learning English, which requires active interaction. This unfavorable psychological environment has the potential to lower academic achievement and widen the gap with students without disabilities. Lawrence et al. (2025) emphasize that true inclusivity is measured not only by physical and academic access but also by equal social acceptance. A supportive school environment will strengthen the participation of students with disabilities in the teaching and learning process. Therefore, a shift in the social paradigm is a crucial aspect that must be developed in parallel with technological and pedagogical innovation. Without social acceptance, the principle of inclusivity will remain merely a formality.

In response to these challenges, a systematic and sustainable solution strategy is needed. Teachers need to receive ongoing training on differentiated learning approaches, the use of assistive technology, and inclusive communication strategies. The curriculum must also be designed to be more flexible to accommodate the needs of students with various disabilities without compromising the quality of core competencies. Furthermore, support from schools, families, and the wider community needs to be strengthened to create an inclusive learning ecosystem. According to Samaniego et al. (2025), multi-stakeholder collaboration is key to the success of inclusive education because each party plays a complementary role. Therefore, inclusive education must be understood as a collective responsibility, not solely the responsibility of teachers. In this context, synergy between pedagogical, technological, and social aspects is key to building sustainability. The implementation of these solutions will determine the extent to which inclusivity can be realized in practice.

Finally, the role of the government and higher education institutions cannot be ignored in realizing an inclusive English learning ecosystem. The government needs to design policies that support the provision of disability-friendly facilities, subsidies for assistive technology, and consistent inclusive curriculum regulations. Higher education institutions must also strengthen the curriculum of prospective teachers with inclusive pedagogical content so that they are prepared to face the realities of diversity in the classroom from the outset. Kour et al. (2025) emphasize that literature reviews can be an important basis for formulating sustainable, evidence-based policies. With this approach, the solutions designed are not merely temporary but build a long-term foundation for inclusive education. This transformation will shift inclusivity from a mere slogan to a concrete practice embedded in the education system. Ultimately, inclusive English learning in the digital age should be seen as a momentum to strengthen a shared commitment to fair, equal, and sustainable education.

Methodology

This research uses a qualitative approach with a literature review method because it is appropriate for examining the challenges and solutions to inclusive English language learning for students with disabilities in the digital age. According to Creswell (2018), qualitative literature studies enable researchers to discover new patterns and meanings through critical interpretation of previous research. Therefore, this research focuses on synthesizing scientific findings, rather than simply describing them.

Data sources were obtained from journals, proceedings, and academic books published between 2015 and 2025, focusing on inclusivity, digital technology, and English language pedagogy. Literature was searched through Google Scholar, Scopus, and ERIC databases using relevant keywords. Snyder (2019) emphasized that literature reviews must be conducted systematically to ensure the validity of the study's results.

The data collection process was carried out through a phased filtering process: initial search, title and abstract review, and full analysis. Only literature that met the inclusion criteria—discussing English language learning for students with disabilities and the use of digital technology—was further analyzed. Booth, Sutton, and Papaioannou (2016) emphasized that the success of a literature study is largely determined by careful selection of relevant sources.

The data was analyzed using thematic analysis to identify key themes such as pedagogical challenges, technological barriers, teacher roles, and policy solutions. Braun and Clarke (2006) describe thematic analysis as a flexible approach capable of uncovering patterns in qualitative data. The validity of the results was ensured by triangulating sources, comparing findings from empirical research, theoretical studies, and policy. Patton (2015) emphasized that triangulation strengthens credibility and enriches understanding of the phenomenon.

The results of this study are expected to map key challenges, examine solutions from previous research, and provide strategic recommendations for the Indonesian education context. In line with Kitchenham (2004), a literature review not only summarizes existing knowledge but also bridges the gap between theory, practice, and policy.

Results and Discussion

1. Challenges in Inclusive English Learning in the Digital Era

Inclusive English language learning in the digital era faces complex challenges, particularly related to teachers' pedagogical limitations in adapting instructional design to diverse student needs. Many teachers still struggle to consistently integrate Universal Design for Learning (UDL) principles, for example, in preparing materials that are user-friendly for students with sensory, cognitive, and neurodivergent disabilities. This limitation is evident in the lack of varied representations and scaffolding that enable students to functionally access English meaning. Consequently, learning tends to focus solely on delivering material without considering the accessibility of the learning experience (Annadurai, 2024).

Beyond pedagogical issues, significant obstacles also arise from limited assistive technology facilities and school infrastructure. Many educational institutions lack devices such as screen readers, digital braille, or accurate captioning services. Furthermore, limited internet connectivity and minimal technical support mean that technology, which should be a pillar of inclusivity, has the potential to deepen inequalities. When existing devices fail to function optimally, students with special needs are forced to face a dual challenge: limited access to materials and lagging behind in learning interactions (Mohammed & Nell, 2019).

Another equally significant challenge is the low level of digital literacy among both teachers and students. Digital literacy here encompasses not only the ability to use applications, but also the sensitivity to ensure content is accessible through user-friendly file formats, the availability of alternative descriptions, consistent navigation, and valid captions. This low awareness often leads to digital technology being positioned merely as a substitute for conventional methods, rather than as a transformation that supports diverse learning styles. As a result, the use of Learning Management Systems (LMS) or interactive media often creates new barriers for students using assistive technology.

Social and cultural factors in schools exacerbate this situation, particularly in the form of stigma that persists toward students with disabilities. Underestimating their ability to learn a foreign language results in low motivation and self-confidence, even leading to language anxiety that hinders active classroom engagement. This situation is further exacerbated when collaborative activities or group discussions are not designed inclusively, resulting in students with special needs often being marginalized from the learning process. Consistent with the views of Tjahjanto & Kusmaladi (2024), the greatest obstacle to inclusive education often lies not in individual limitations, but in an environment that fails to accommodate diversity without discrimination.

On the other hand, English language assessment practices often neglect the principles of fairness and equality. Listening-based exams without captions, speaking assessments using speech recognition devices, or writing rubrics that overemphasize mechanical aspects are clear examples of discrimination against students with disabilities. Technical requirements that are incompatible with assistive technology, such as online proctoring requiring active cameras, also have the potential to exclude students with sensory needs (Amanda & Wulandari, 2022). Assessments should, however, serve to measure language competence, not reinforce accessibility limitations.

Furthermore, the use of artificial intelligence (AI)-based technology in language learning raises ethical and bias issues. Automated feedback systems often assess variations in accent or speech patterns as errors, thus reinforcing bias against students with speech disabilities or certain language backgrounds. The use of learning analytics, facial tracking, and even class recordings for captioning also raises privacy issues that often harm students. Without a clear ethical framework, technology that should support inclusion can actually reinforce exclusionary practices (Wahyuni et al., 2024).

The linguistic aspects of English itself also pose challenges for students with special needs. Irregularities in phonology and orthography, complex prosody, and an emphasis on authentic accents often hinder their ability to develop listening and speaking skills. Audio-visual materials that lack multimodal alternatives such as transcripts, intonation visualizations, or visual phonics further exacerbate these barriers (Annisa, 2025). Thus, formal access to materials exists, but functional access to meaning and interaction is not fully realized.

From all these challenges, it is clear that inclusive English learning in the digital age requires not only technological innovation but also a transformation of the educational paradigm. Teacher competence in integrating inclusive pedagogy, the continued availability of assistive technology, increased digital literacy, and the creation of a stigma-free school culture are key factors. Without

systemic change, the presence of technology will only result in a false sense of inclusion that blinds students to their real needs. Therefore, the direction of learning policies and practices needs to move toward designs that anticipate diversity from the outset, so that every learner has an equal opportunity to succeed in learning English.

2. Utilizing Digital Technology to Support Inclusivity

The use of digital technology in English language learning has great potential to create a more inclusive learning environment for all students, including those with special needs. Technology is no longer viewed merely as an additional tool, but rather as a pedagogical enabler capable of integrating Universal Design for Learning (UDL) principles into the curriculum. By implementing a variety of text, audio, visual, and interactive modalities, each student can access materials according to their abilities and learning preferences. This aligns with the view of Azizah & Hendriani (2024), who emphasized that technology should be viewed as an empowering instrument, as it serves to open access and opportunities for students to develop their academic and social potential.

Various digital innovations such as screen readers, text-to-speech (TTS), speech-to-text (STT), and closed captioning (CC) enable more equal participation. For example, TTS features help students with dyslexia or low vision understand text through audio support, while STT supports those with motor impairments or writing difficulties by providing a spoken-to-written pathway (Madjdi & Hariyadi, 2025). Similarly, CC provides deaf students with access to a more comprehensive understanding of audiovisual content. Speech recognition technology, equipped with articulatory feedback, also provides opportunities for students to practice pronunciation and prosody independently without always waiting for teacher intervention.

Interactive video technology and multimodal learning objects add a layer of inclusivity to the language learning process. Interactive content equipped with embedded questions or adaptive remediation paths makes it easy for students to repeat specific segments as needed. The availability of high-contrast options, font size adjustments, and keyboard-friendly navigation further strengthen the accessibility dimension (Nurahma et al., 2025). Furthermore, AI-based writing software with grammar checkers, word predictions, and illustrated dictionaries can support students' writing skills, especially those who struggle with language structure or spelling. Teachers can also provide multimodal feedback, both through text and audio, to better suit students' learning styles.

The presence of AI-based learning platforms opens up opportunities for deeper personalization. The system can adjust the complexity of the material based on the student's abilities, identify recurring error patterns, and provide appropriate practice recommendations. However, pedagogical decisions remain in the hands of the teacher, as data interpretation and intervention selection require contextual, ethical, and emotional considerations. Furthermore, a challenge to be aware of is linguistic bias, particularly when the system unfairly corrects non-standard accents (Nuzuliana et al., 2024). This highlights the importance of content curation and system validation to ensure inclusivity is not compromised by algorithmic limitations.

Another major challenge in utilizing digital technology is limited access. Inequality in devices, internet networks, and digital literacy can create new gaps in inclusive education. Therefore, low-bandwidth-by-default design strategies need to be pursued, for example by providing lightweight versions of materials, offline download options, and applications that continue to function even with unstable connections. Utilizing open educational resources and free software can also reduce cost barriers, while device lending policies or utilizing community laboratories are practical steps to expand access (Kwata & Ogunleye, 2024).

Beyond technical aspects, the governance and ethics of technology use must be given serious attention. Student personal data recorded during the learning process, such as voice, text, or digital interactions, must be managed with strict protection principles. Accessibility audits of platforms and content should be conducted regularly, involving the direct participation of students with disabilities as a form of co-design. Documenting learning preferences or accommodations integrated into the learning management system is also crucial to ensure that every pedagogical decision can be consistently implemented and replicated across classroom contexts.

Teacher readiness is a determining factor in the extent to which digital technology truly supports inclusivity. Practical training programs, such as micro-credentials for the use of accessibility features, UDL-based lesson study, and inclusive assessment workshops, can strengthen teacher capacity. The existence of professional learning communities that share good practices, resources, and everyday

technical solutions will further accelerate the process of technology adaptation in the classroom. This way, technology is not simply utilized but consciously integrated into reflective pedagogical practices.

Ultimately, evaluating the use of digital technology should not stop at academic achievement alone; it should also assess the extent to which learning accessibility is achieved. Indicators such as the number of students who can actually access materials, the use of accessibility features, and active participation in multimodal assignments are important measures. Authentic assessments that accommodate various modes of expression, such as closed-captioned presentations or reflective podcasts, can demonstrate both language development and student engagement. With this approach, digital technology truly fulfills its essential function: expanding opportunities, strengthening participation, and affirming that inclusivity is a systemic design principle that must be present in every aspect of English language learning.

3. Solution Strategy and Recommendations for Sustainable Implementation

Sustainable implementation of inclusive education requires a planned, systemic framework, through clear governance based on a theory of change. This process begins with mapping the initial conditions, including student needs, teacher capacity, and resource availability. It is then followed by core interventions such as teacher training, adaptive curriculum development, and the use of assistive technology. The intended intermediate outcomes are increased access and participation, while the long-term impact is directed at achieving fair and equal learning outcomes. Schools need to develop an inclusive action plan embedded in the School Work Plan so that sustainability is not solely dependent on individuals but integrated into the system. Accountability can be maintained through regular reporting mechanisms and public feedback forums that include parents and organizations of people with disabilities (Hegab et al., 2023).

Strengthening teacher capacity is a central element of this strategy, which cannot be achieved through one-off training but must be sustained through teacher learning communities, lesson study, and peer mentoring. The Universal Design for Learning (UDL) and Multi-Tiered System of Supports (MTSS) approaches are the main foundations for learning to accommodate diverse needs. Teachers need to be equipped with the skills to develop realistic individual learning plans and develop fair assessment adaptations without compromising standards. The presence of inclusive core teachers as drivers of good practices will help ensure capacity continuity despite staff rotation (Suriadiata, 2024).

From a curriculum perspective, an adaptive approach can be realized through multi-modal learning designs that present teaching materials in various accessible formats, from braille and screen-based text readers to videos with sign language. Assessments also need to be oriented toward formative models that guide ongoing instructional adjustments, while summative assessments are structured using transparent and inclusive rubrics. This integration requires the establishment of operational standards at the school level so that adaptive practices do not rely on teachers' personal preferences but become part of the institutional culture.

Policies related to assistive technology must ensure a systematic procurement, maintenance, and utilization process, taking into account long-term costs and accessibility standards. Providing a lending library of assistive devices in schools can be an efficient solution, supported by technical staff or ICT teachers who serve as daily support centers. Furthermore, involving parents and students in the technology selection process will strengthen the relevance and effectiveness of its use. This aligns with the need to maintain data privacy and digital literacy as part of ethical technology use.

Multi-stakeholder collaboration is another integral foundation. Partnerships between teachers, parents, government, health institutions, organizations for people with disabilities, and technology developers need to be fostered regularly through communication forums and joint evaluations. The role of parents as co-educators must also be strengthened through training in home support strategies and effective communication channels. Meanwhile, technology developers need to be involved from the design stage to ensure the resulting solutions truly meet students' needs.

Aspects of a school's physical environment and culture also play a significant role in supporting sustainability. Accessibility features such as ramps, tactile pathways, and contrasting signage should be implemented alongside efforts to build an anti-discrimination culture through empathy literacy programs and anti-bullying policies. Resource rooms with multi-sensory materials can enrich the learning experience, while flexible learning schedules will minimize the exclusion of students who require additional intervention. Support for teacher well-being should also be a priority, as high levels of burnout have the potential to undermine program sustainability.

Monitoring and evaluation processes need to be developed using a Plan–Do–Study–Act cycle that enables continuous improvement. Success indicators can be measured through levels of access, participation, process quality, and learning outcomes, then displayed in a simple and transparent school dashboard. Evaluation results serve not only as accountability reports but also as a basis for improving teacher training, equipment allocation, and school policies. Publishing annual progress reports on inclusion can strengthen accountability and provide a platform for sharing good practices between schools.

Finally, the sustainability of implementation can be ensured through a structured roadmap with short-, medium-, and long-term stages. Each stage emphasizes integration into school quality documents, the formation of train-the-trainer programs, and a multi-layered financing strategy involving school funds, government support, and CSR and grants. With this framework, inclusive education is no longer a one-off project but a consistent institutional commitment. As Grilli & Balzi (2023) emphasize, inclusive education can only be realized if all parties are committed to equality and sustainability, creating a truly holistic learning ecosystem.

Conclusion

In conclusion, inclusive English learning in the digital age demands a transformation that goes beyond mere technology integration, but rather a paradigm shift in education toward a system designed from the outset to accommodate learner diversity. Barriers ranging from limited teacher pedagogy, a lack of assistive devices, low digital literacy, and social stigma demonstrate that inclusivity is not merely a technical issue, but also a cultural and structural one. The absence of scaffolding and varied representation results in unequal access to materials, while infrastructure gaps deepen inequities. Low ethical awareness in the use of AI and linguistic bias contribute to reinforcing the very exclusions that should be prevented. The complexity of the English language itself adds to the challenges, especially for students with special needs who require multimodal support to access meaning. Therefore, the principles of Universal Design for Learning (UDL) must be the foundation of the curriculum so that accessibility is built in, not added. The role of teachers is crucial, as their pedagogical competence and digital literacy will determine the success of inclusive technology use. Furthermore, a stigma-free and collaborative school culture is a prerequisite for creating an equitable learning environment. Assessments must also be geared toward equitable practices, assessing competency without reinforcing limitations on access. This process requires systemic policies that support the provision of assistive technology, ongoing mentoring, and the protection of student ethics and privacy. Thus, true inclusivity will only be achieved when technological innovation goes hand in hand with consistent pedagogical, ethical, and institutional commitments.

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