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PERSONALIZING EFL LEARNING IN INCLUSIVE CLASSROOMS: THE ROLE OF GENERATIVE AI IN DIFFERENTIATED INSTRUCTION

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Abstract: Generative AI has emerged as a promising tool for addressing learners diversity in English as a Foreign Language (EFL) classrooms. However, previous studies have primarily examined the use of generative AI to support language learning, leaving a limited understanding of how generative AI supports differentiated instruction in inclusive EFL contexts. This study aims to investigate how generative AI supports differentiated instruction in inclusive EFL classrooms by addressing learners' diverse readiness levels, interests, and learning profiles. Employing a qualitative descriptive design, the study involved six EFL teachers from different schools who were purposively selected for their experience implementing generative AI in inclusive EFL classrooms. Data were collected through semi-structured interviews, classroom observations, and document analysis, and were analyzed using thematic analysis. The findings reveal that generative AI assists teachers in adapting instructional content, learning processes, and assessment to accommodate learners' diverse needs. It also enabled teachers to foster student engagement by providing adaptive feedback, personalized learning experiences, and multimodal learning resources. Nevertheless, the implementation of generative AI continues to face three challenges, including limited technological infrastructure, insufficient teacher training, and concerns regarding excessive reliance on AI. These findings contribute to the growing understanding of AI-assisted differentiated instruction and provide practical insights for integrating generative AI into inclusive EFL teaching.

Keywords: differentiated instruction, generative AI, inclusive classroom

INTRODUCTION

Technology is an important part of EFL classrooms. The utilization of digital tools such as mobile learning and computer-based systems has been proven to enhance flexibility, accessibility, and student engagement (Yudhiantara & Saehu, 2017; Dewi et

al., 2021; Sakina & Astuti, 2024). Furthermore, generative AI has expanded these possibilities by enabling more personalized and responsive learning (Zaim et al., 2024). Research also shows that ICT can help people study better. For instance, it can help blind and low-vision students enhance their speaking and talking (Cárdenas-Barón et al., 2025). However, there are still certain obstacles, such as a lack of teacher training, a lack of funds, and implementation issues (Lintangsari & Emaliana, 2020; Toboula et al., 2024).

In recent years, AI has been developing rapidly in several areas, especially in education. AI-powered applications such as ChatGPT, Gemini, Microsoft Copilot, and other generative AI tools are increasingly being used to support lesson planning, generate instructional materials, provide automated feedback, and personalize learning activities. The Indonesian government, through the Ministry of Primary and Secondary Education, sponsored the release of a Joint Decree (Surat Keputusan Bersama) of seven ministers on the use of digital technology and artificial intelligence in education. In basic and secondary education, the educator serves as the primary facilitator. AI is utilized as a complementary tool rather than a replacement for human intellectual work. Specifically, teachers can use AI as a planning assistant to generate innovative teaching ideas, draft lesson plans (RPP), create varied practice questions, and simplify complex concepts.

AI has affected attitude and practice in education, both potential and problems. Adil (2025) stated that AI brings issues in terms of infrastructure and worries about the function of teachers and pedagogical interactions, which are starting to disintegrate. AI also offers chances for all kinds and processes of learning, such as enabling opportunities for students to build immersive learning environments (Eden et al., 2024). Inclusive and differentiated classrooms increasingly benefit from AI technologies because teachers alone cannot always accommodate the diverse needs of all learners.

According to Adeleye et al., (2024), AI has an important function in inclusive classes such as interpreting, analyzing, and responding to the form of text, speech, and even movement. Certainly, it can support and promote EFL student learning in inclusive classrooms. However, the learning processes often present issues for teachers because of the variances in students' learning styles, so individualized learning is needed to respond to these needs.

The increasing use of generative AI is an important factor for inclusive classrooms. From the academic perspective, generative AI aids student learning, such as Google Translate, which supports language acquisition (Li & Samah, 2025). Generative AI has the potential to reduce barriers experienced by students with autism and ADHD by providing more accessible and personalized learning opportunities. Generative artificial intelligence (GAI) serves as a transformative tool in inclusive classrooms by providing personalized scaffolding and reducing cognitive load for students with ADHD, autism, and dyslexia. These tools foster equitable social interactions and break down linguistic barriers, allowing neurodivergent and nonverbal learners to participate more fully in collaborative task. Generative AI can also contribute to a more empathic and supportive

environment, where students feel respected and valued for their equal opportunities by delivering personalized materials that make students feel valued and supported. Tools like AI-driven communication aids for students with disabilities build a sense of belonging and enable active participation. By allowing learners to progress at their own pace, AI significantly boosts confidence and motivation, ensuring equitable opportunities for all students to thrive in inclusive classrooms.

Generative AI can support students with special needs to express themselves and engage effectively, as emphasized by Singh & Gupta (2025). In practice, generative AI is not yet widely utilized by teachers to personalize learning and implement differentiated instruction in inclusive classrooms. Generative AI remains underutilized in inclusive classrooms primarily due to a critical gap in professional development, with 60% of educators citing a lack of training as a major barrier. Additionally, 55% of stakeholders harbor data privacy and ethical concerns, which, alongside a lack of resources, makes it difficult for teachers to navigate technical complexities. These systemic hurdles must be addressed to move beyond experimental use toward truly equitable and personalized learning environments.

Several studies have examined the use of AI for personalized learning from three main perspectives: EFL practices, differentiated instruction, and technology in language learning. Inclusive education has the purpose of providing impartial learning opportunities for all students. To accommodate education, especially for learners with special needs, education should tailor the curriculum, instruction, and assessment to their needs (Yatağanbaba & Gümüş, 2024). In line with this, differentiated instruction (DI) helps teachers adjust instruction to students' readiness, interests, and learning profiles (Mardhatillah & Suharyadi, 2023). Studies on differentiated instruction show that differentiated instruction improves student engagement, understanding, and achievement by addressing individual differences (Mardhatillah & Suharyadi, 2023).

Recent research on generative AI shows its promise for supporting language acquisition with automated feedback, content production, and interactive practice (López-Molines, 2025; Zaim et al., 2025). AI can also improve motivation and engagement by content personalization to learners' levels and interests. Furthermore, AI can be used to promote inclusive and differentiated learning by supporting the creation of tailored learning environments (Szabó & Szoke, 2024).

There is still limited research on the role of generative AI in supporting differentiated instruction within inclusive EFL classrooms (Zaim et al., 2024). Although previous studies have demonstrated the potential of generative AI to enhance personalized language learning (López-Molines, 2025; Zaim et al., 2025), only a few have examined how teachers utilize it to address learners' diverse readiness levels, interests, and learning profiles in authentic inclusive classroom settings. Furthermore, Yatağanbaba and Gümüş (2024) highlighted the continuing need for practical guidance to support teachers in implementing inclusive instructional practices.

Therefore, this study aims to investigate the role of generative AI in supporting differentiated instruction in inclusive EFL classrooms and how it addresses learners'

diverse learning needs. The findings of this study are expected to contribute to the growing body of knowledge on the integration of generative AI in EFL education, particularly in supporting differentiated instruction within inclusive classrooms. Practically, the findings are expected to provide insights for EFL teachers on how generative AI can be effectively utilized to accommodate learners with diverse readiness levels, interests, and learning profiles. In addition, the findings may serve as a reference for future studies investigating AI-assisted differentiated instruction in inclusive language learning contexts.

LITERATURE REVIEW

Differentiated Instruction and Inclusion in EFL Learning

Differentiated instruction has been widely discussed in the field of linguistics and language education. According to Tomlinson (2001), differentiated instruction refers to the process of modifying content, process, product, and learning environment to address learners' diverse readiness levels, interests, and learning profiles. Similarly, Gheyssens et al., (2023) state that differentiated teaching should be considered as a full educational model rather than a series of tactics. The reason is because it has both philosophical and practical portions, which are designed to give all pupils the best possibilities to learn. These perspectives argue that varied education is an essential component of ensuring equal learning opportunities for all students and responding to students' differences. Taken together, these perspectives suggest that differentiated instruction is a comprehensive pedagogical approach that enables teachers to respond systematically to learners' diverse readiness levels, interests, and learning profiles, thereby promoting equitable learning opportunities for all students.

Differentiated instruction is based on a number of learning theories which emphasize the variety of learners. In constructivist theory, Piaget (1970) emphasizes that learners actively create information according to their level of developmental readiness, and Vygotsky's (1978) sociocultural theory emphasizes the role of scaffolding within the Zone of Proximal Development in facilitating the learning process. Moreover, Gardner's (1983) theory of multiple intelligences emphasizes the variation in cognitive strengths of learners, which calls for varied teaching methodologies. More recent frameworks like Universal Design for Learning (UDL) (Meyer et al., 2014) put more focus on the need to provide multiple ways of representation, interaction, and expression that are strongly related to differentiated teaching concepts. Taken together, these theories provide a strong theoretical foundation for differentiated instruction by emphasizing that effective teaching should accommodate learners' diverse developmental levels, cognitive strengths, and learning preferences through flexible instructional practices. These principles closely align with the goals of inclusive education, which seeks to ensure equitable learning opportunities by recognizing and responding to learner diversity.

In addition, inclusive education has been widely conceptualized as a guiding principle in modern education systems. According to UNESCO (2005), inclusive education refers to a process of addressing and responding to the diversity of all

learners by increasing participation in learning and reducing exclusion within education. In line with this, as Gheyssens et al., (2023) point out, differentiated instruction enables teachers to adapt their instruction to students' readiness, interests, and learning profiles and so maximizes learning chances for all students. In general, inclusive and learner-centered language learning needs varied training. Some scholars recommend tailoring language teaching to students' different linguistic backgrounds and skills in heterogeneous EFL classes (Benhammada & Meguellati, 2022; Cruz et al., 2023). This notion is particularly relevant to understanding how EFL teachers may create inclusive learning environments for all students, including those with special needs.

Several studies have investigated differentiated instruction in language learning contexts. For instance, Lee and Hung (2025) examined the implementation of differentiated instruction through lesson study in EFL higher education. Collaborative methods helped teachers generate more individualized and responsive teaching tactics, they found. Likewise, Cruz et al., (2023) found that inclusive education practices helped to boost the teachers' skills in curriculum modification and classroom management for diverse students in EFL classrooms. In another study, authors Benhammada and Meguellati (2022) found that teachers are aware of the need of differentiated education, but its practice is limited due to restrictions such as lack of training and institutional support. Taken together, these studies demonstrate that differentiated instruction is both valuable and challenging to implement. The persistent difficulties related to instructional adaptation, teacher workload, and limited professional support highlight the need for tools that can assist teachers in designing and implementing differentiated instruction more effectively, creating a rationale for exploring the role of generative AI in inclusive EFL classrooms.

Recent research also emphasizes the changing role of differentiated instruction in today's EFL settings. Purnamaningwulan & Purwanto (2025) researched differentiated instruction methodologies in mixed-proficiency EFL classes. The finding showed that DI greatly affected students' motivation, collaboration, and engagement. However, there were problems with classroom management and grouping. The use of technology in the classroom is more interesting for everyone and makes it easier for children with special needs to learn English (Masitoh & Istiqomah, 2023). New research on AI-enabled learning spaces also shows the ability of smart technology to help teachers deal with diverse types of pupils in the classroom through the creation of adaptable materials and enabling personalised learning. Differentiated instruction has great potential to make classrooms more engaging (Gheyssens et al., 2023), but it is mostly applied in bits and pieces, depending on teachers' attitudes, mindsets and professional development.

Although previous studies have demonstrated the benefits of differentiated instruction and the growing potential of educational technologies in language learning, they have largely examined these areas separately. Consequently, there remains limited understanding of how EFL teachers integrate generative AI into differentiated instructional practices to support learner diversity in inclusive classrooms. This gap

highlights the need to explore teachers' experiences in utilizing generative AI to accommodate students with diverse readiness levels, interests, and learning profiles.

LLM-based Generative AI for Personalized and Differentiated EFL Learning

Generative AI has been widely discussed, particularly in the field of education. Generative AI is an artificial intelligence system, especially large language models (LLMs), that may help humans not only in generating ideas but also in creating relevant and meaningful content, especially to promote language acquisition (Limiya & Kumar, 2025). Tafazoli (2024) describes generative AI as an intelligent language assistant that can support teachers by generating adaptive learning materials and providing immediate feedback for language learning activities, particularly in writing and grammar instruction. Nevertheless, the generated feedback should be reviewed by teachers to ensure its accuracy, appropriateness, and alignment with instructional objectives. The results suggest that generative AI plays a vital role in language learning in particular to strengthen interactive learning that may be applied to differentiated learning responding to the demands and backgrounds of learners.

Recent studies indicate that LLM-based generative AI is increasingly integrated into adaptive and personalized language learning by generating tailored learning materials, providing immediate feedback, and adjusting learning activities to learners' proficiency levels, interests, and instructional needs (Holmes et al., 2019). The learning process has been made easier by the tools driven by AI, which provide interactions that may look like feedback and content modifications depending on the learning demands of the students, their interests, abilities, and learning speed (Moqbel, 2025; Dekhakhena, 2025). Theoretically, the findings are consistent with socio-cultural theory that views AI as a tool or bridge in facilitating the learning process (Luckin, 2018; Zawacki-Richter et al., 2019). At the same time, the active participation of learners in gaining knowledge through adaptive interactions and processes is also in line with constructivist learning theory (Holmes et al., 2019). Additionally, by framing generative AI as a catalyst for expanding students' knowledge through collaborative learning, it leads to self-directed learning (Holmes et al., 2019). These notions of generative AI are useful in backing up findings on how individualized and differentiated EFL learning can be supported through the role of generative AI within an instructional environment.

Several researchers are studying how generative AI may assist people in learning languages. Guan et al., (2025) investigated the application of holistic LLM-based generative AI in lessons for the English as a foreign language (EFL) learner. The AI has made it possible for teachers and students to chat, which has enhanced motivation and enthusiasm in a considerable measure and so increases the language skills of the pupils. AI can also aid individuals to learn, yet teaching is still a vital profession. Similarly, Abdelhalim and Almaneea (2025) discovered that the use of generative AI to facilitate project-based learning increased the emotional and mental engagement of EFL students. A further study by Tasdelen & Bodemer (2025) revealed that generative AI-personalized learning materials increased student motivation and improved student learning

performance by adapting to individual needs. Although generative AI can support language learning, teachers remain essential in designing, monitoring, and adapting instruction to learners' diverse needs, particularly in inclusive EFL classrooms.

These studies have investigated how generative AI plays an important role in helping differentiate learning in EFL classrooms. Generative AI has offered students new experiences, such as real-time feedback, adaptive content, and interactive learning experiences. Several studies suggest that the use of generative AI in language acquisition makes it more individualized and differentiated, especially in English as a Foreign Language (EFL) classrooms (Guan et al., 2025; Abdelhalim & Almaneea, 2025; Tasdelen & Bodemer, 2025). But generative AI is not yet a major feature of individualized and differentiated English language instruction in classes where everyone's welcome. Therefore, the purpose of this study is to find out how generative AI may aid with differentiated instruction in these settings and how it assists students in meeting their diverse learning needs.

METHOD

This study employed a qualitative descriptive design across multiple junior high school settings to explore how generative AI supported differentiated instruction in inclusive English as a Foreign Language (EFL) classrooms. A qualitative descriptive design was selected because the study aimed to provide a direct and comprehensive account of teachers' perceptions, experiences, pedagogical reasoning, and implementation of generative AI in their natural instructional settings (Sandelowski, 2000).

The study was conducted in Garut Regency, West Java, Indonesia, and involved six EFL teachers from six different junior high schools. Conducting the study across different school settings enabled the researchers to identify shared patterns and contextual variations in teachers' use of generative AI for differentiated EFL instruction. In this study, an inclusive EFL classroom was operationally understood as a heterogeneous classroom in which learners with different readiness levels, interests, learning profiles, abilities, and learning support needs learned together.

Six EFL teachers were recruited through criterion-based purposive sampling. Purposive sampling was used because the study required participants who had direct experience with the phenomenon being investigated (Creswell, 2018). To be included in the study, participants were required to: (1) be actively teaching English at a junior high school in Garut Regency; (2) have experience teaching inclusive or heterogeneous EFL classrooms; (3) have used at least one generative AI tool in lesson planning or classroom instruction; (4) have used generative AI to adapt learning materials, activities, or learning products for students with diverse learning needs; and (5) be willing to participate in interviews, classroom observations, and document analysis.

Teachers were excluded if they: (1) were not actively teaching EFL at the time of the study; (2) were familiar with generative AI but had not implemented it in their teaching; (3) had no experience teaching inclusive or heterogeneous classrooms; or (4) did not complete the required data-collection procedures. Potential participants were identified and contacted through direct invitations. Six teachers who met the eligibility criteria and agreed to participate were included in the study. To protect their confidentiality, the participants were assigned the codes T1 to T6.

The data collection instruments were informed by Tomlinson's (2001) differentiated instruction framework. The framework emphasizes the differentiation of

content, process, and product according to learners' readiness levels, interests, and learning profiles. These dimensions guided the development of the semi-structured interview guide, classroom observation protocol, and document-analysis. Data were collected through semi-structured interviews, classroom observations, and document analysis. The semi-structured interviews were used to explore teachers' perceptions, experiences, pedagogical decisions, and reported challenges regarding the use of generative AI in differentiated instruction. The interviews were not used as the sole source for examining teachers' actual instructional practices. Instead, they provided participants' accounts and explanations of why and how they incorporated generative AI into their instruction.

Each interview lasted approximately 10–15 minutes and was conducted either face-to-face or online, depending on participant availability. The interviews were conducted in Indonesian. With the participants' consent, the interviews were audio-recorded and subsequently summarized in detailed written notes for analysis.. Classroom observations were conducted to examine teachers' enacted instructional practices.

The observations focused on how teachers used generative AI to adapt instructional content, facilitate different learning processes, support varied learning products, and respond to learners' readiness levels, interests, and learning profiles. Each teacher was observed two or three times, with each observation lasting approximately 25–30 minutes. An observation protocol informed by Tomlinson's (2001) framework was used to record the generative AI tools employed, teachers' instructional actions, learning activities, forms of differentiation, and observable student participation. The observations focused on observable classroom actions and participation rather than attempting to measure students' internal motivation or engagement.

Document analysis was conducted to examine teachers' planned and documented instructional practices. The analyzed documents included lesson plans, AI-generated or AI-adapted teaching materials, student learning tasks, assessment instructions, and other instructional resources provided by the participating teachers. A document-analysis matrix was used to identify evidence of content, process, and product differentiation and the ways in which generative AI was incorporated into instructional planning.

The three data sources served different but complementary purposes. Interviews captured teachers' reported perceptions, experiences, and pedagogical reasoning; classroom observations captured enacted instructional practices; and instructional documents provided evidence of planned and documented practices. Comparisons across these sources enabled methodological triangulation and strengthened the credibility of the findings.

The data were analyzed using a hybrid deductive–inductive thematic analysis following Braun and Clarke's (2006) six-phase procedure. The deductive component was guided by Tomlinson's (2001) concepts of content, process, product, readiness, interest, and learning profile. The inductive component allowed additional patterns, particularly the perceived benefits and implementation challenges of generative AI, to emerge from the data.

In the first phase, the researchers familiarized themselves with the dataset by repeatedly reading the interview transcripts, classroom observation notes, and instructional documents. Initial notes were made to identify recurring ideas, relevant experiences, and possible relationships across the data sources.

In the second phase, the data from each source were initially coded separately. Interview transcripts were coded to identify teachers' perceptions, experiences, pedagogical reasoning, and reported challenges. Classroom observation notes were coded to identify enacted instructional practices and observable classroom activities. Instructional documents were coded to identify planned differentiation and evidence of AI-supported material adaptation. The coding process was conducted manually. Both deductive and inductive codes were generated. Framework-based codes included "content differentiation," "process differentiation," "product differentiation," "learner readiness," "learner interest," and "learning profile." Additional data-driven codes included "simplifying instructional materials," "providing repeated explanations," "supporting student confidence," "limited teacher training," "unstable internet connection," and "excessive reliance on AI."

In the third phase, the initial codes were compared and organized into potential themes. A cross-source analysis matrix was used to compare evidence from interviews, classroom observations, and instructional documents. For example, a teacher's statement about using AI to produce easier texts for struggling learners and more complex texts for advanced learners was coded as "adapting text difficulty." This code was compared with observation evidence showing the use of materials at different difficulty levels and documents containing adapted versions of instructional texts. The combined evidence contributed to the development of the theme "Differentiation of Content."

In the fourth phase, the potential themes were reviewed against both the coded extracts and the complete dataset. Themes were revised, combined, separated, or removed when they lacked sufficient supporting evidence or conceptual coherence. Evidence that contradicted or did not fully support the emerging interpretations was also examined to reduce confirmation bias.

In the fifth phase, the final themes were defined and named by identifying the central concept represented by each theme and determining how it contributed to answering the research objective. The final themes addressed teachers' perceptions of generative AI, differentiation of content, process, and product, support for learners' diverse needs, and challenges in implementing generative AI.

In the sixth phase, the findings were organized and reported using representative interview excerpts. The interview evidence was supported, where available, by classroom observation and document-analysis findings. Evidence from the three data sources was continually compared throughout the analytical and reporting processes to strengthen the credibility, transparency, and consistency of the interpretations.

FINDINGS AND DISCUSSION

The hybrid deductive–inductive thematic analysis of the interview data resulted in four overarching themes and six subthemes concerning teachers' perceptions, experiences, and reported practices regarding the use of generative AI in differentiated EFL instruction. The deductive analysis was guided by Tomlinson's (2001) differentiated instruction framework and organized the data into the overarching theme of AI-supported differentiation, which comprised three subthemes: content differentiation, process differentiation, and product differentiation. Meanwhile, the inductive analysis identified three additional overarching themes: generative AI as a complementary instructional partner, teachers' perceptions of support for learner access and participation, and conditions limiting sustainable generative AI integration. The final

theme comprised three subthemes: limited teacher training, infrastructure constraints, and pedagogical concerns regarding excessive reliance on AI.

The findings reflect the participating teachers' perceptions, experiences, pedagogical reasoning, and reported classroom practices. Therefore, statements concerning students' participation, confidence, and access to learning should be understood as teachers' perceptions rather than as direct evidence of students' experiences, psychological states, or learning outcomes.

Generative AI as a Complementary Instructional Partner

This inductively generated theme was developed from recurring codes such as "instructional assistant," "faster material preparation," "ideas for different proficiency levels," "teacher guidance," and "AI as support rather than replacement." The participating teachers generally perceived generative AI as a pedagogical resource that supported lesson preparation, material adaptation, and classroom instruction. They did not describe AI as a substitute for teachers' professional roles. Instead, they viewed it as a complementary tool whose educational value depended on teachers' pedagogical decisions and supervision.

Excerpt 1

"*AI helps me prepare materials faster and gives me ideas for different student levels*." (Teacher 2)

This excerpt indicates that the teacher used generative AI during instructional preparation, particularly to generate ideas and materials for learners with different proficiency levels. The finding should not be interpreted as objective evidence that AI reduced preparation time in all situations. Rather, it reflects the teacher's perception that AI made the preparation of differentiated materials more efficient.

Teachers also reported using generative AI to generate instructional examples, simplify explanations, and respond to students' questions. These reported practices suggest that AI was incorporated into both lesson preparation and classroom instruction. Nevertheless, teachers remained responsible for selecting, adapting, and presenting the generated content.

Excerpt 2

"*Generative AI is very helpful; it is like my assistant in the classroom, especially when students have different abilities*." (Teacher 5)

The description of AI as an "assistant" reflects a teacher-mediated model of technology integration. Generative AI expanded the range of instructional resources available to teachers, but it did not independently determine what learners needed or how instruction should be organized. Teachers continued to identify learning needs, establish objectives, select appropriate materials, and decide whether AI-generated responses were suitable for their students.

This finding is consistent with Tafazoli's (2024) description of generative AI as an intelligent language assistant that can provide adaptive instructional support. It also aligns with Limiya and Kumar's (2025) argument that generative AI can assist the production of language-learning materials. The present study provides contextual evidence from selected Indonesian junior high school settings by showing that teachers

used AI not only as a student-facing language tool but also as a resource for planning and adapting classroom instruction.

From a sociocultural perspective, generative AI may be understood as a mediational tool that supports, rather than replaces, pedagogical interaction. Nevertheless, the value of such mediation remains dependent on teachers' ability to evaluate the appropriateness of AI-generated materials and responses.

Excerpt 3

"*AI is helpful, but it cannot replace the teacher's guidance*." (Teacher 1)

This statement demonstrates that the participants recognized the limitations of generative AI. Although AI could provide explanations, examples, or adapted materials, teachers remained responsible for monitoring students' learning processes, clarifying inaccurate or inappropriate responses, and ensuring that AI use supported the intended learning objectives.

This finding reinforces Guan et al., (2025), who emphasize the importance of interaction among teachers, students, and generative AI rather than technological substitution. However, the present findings further suggest that teacher guidance was not simply an additional element of AI-assisted learning. It was a central condition that determined whether AI-generated resources could be used appropriately in differentiated EFL instruction.

Overall, this theme indicates that generative AI was perceived as most useful when it complemented teachers' pedagogical expertise. Its contribution was therefore relational rather than autonomous: AI expanded teachers' instructional options, while teachers provided contextual judgment, instructional supervision, and pedagogical direction.

AI-Supported Differentiation of Content, Process, and Product

This deductively informed theme was developed using Tomlinson's (2001) concepts of content, process, and product differentiation. The analysis showed that teachers used generative AI in three related ways: adapting what students learned from, varying how students received support and completed learning activities, and providing different ways for students to demonstrate learning.

Differentiation of Content

Content differentiation was developed from codes such as "simplifying texts," "adapting text difficulty," "generating parallel materials," and "providing more challenging content." Teachers reported using generative AI to modify the linguistic complexity of instructional materials according to students' readiness levels.

Excerpt 4

"*I use AI to create easier versions of texts for struggling students and more complex ones for advanced students*." (Teacher 3)

The excerpt shows that the teacher used generative AI to produce different versions of instructional content while maintaining a common topic or learning objective. Instead of requiring all learners to access an identical text, the teacher adjusted vocabulary, sentence complexity, or task difficulty according to learners' current levels.

Teachers' accounts indicate that generative AI functioned as a material-adaptation tool rather than merely as a source of additional information. Within Tomlinson's (2001) framework, content differentiation involves varying learners' access to essential knowledge according to readiness while preserving common learning objectives. The findings suggest that teachers used AI to prepare parallel materials with different levels of linguistic complexity. However, the quality of these adaptations remained dependent on teachers' evaluation of their linguistic accuracy, difficulty, and contextual appropriateness.

This finding supports Mardhatillah and Suharyadi's (2023) argument that differentiated instruction allows teachers to respond to learner diversity by modifying instructional content. It is also consistent with Guan et al., (2025), who found that generative AI can support the development of adaptive learning materials. However, the present study extends these findings by providing contextual evidence of how teachers in selected Indonesian junior high schools used AI-generated adaptations within mixed-readiness classes. The teachers did not necessarily create different learning objectives for each student. Instead, they used AI to provide different levels of access to similar instructional goals. This distinction is important because it positions AI-supported differentiation as an attempt to create equitable access rather than simply giving easier work to some learners and more difficult work to others.

Differentiation of Process

Process differentiation was developed from recurring codes such as "repeated explanations," "additional clarification," "self-paced practice," "interactive exercises," and "immediate support." Teachers reported that generative AI allowed students to obtain explanations and practice opportunities according to their individual levels of understanding.

Excerpt 5

"*Students can ask AI to explain again and again until they understand*." (Teacher 4)

This excerpt suggests that generative AI provided an additional source of explanation for students who required repetition or alternative clarification. According to the teachers, some students used AI to revisit information before proceeding to subsequent tasks, reducing their exclusive reliance on immediate teacher assistance. However, the study did not directly examine the accuracy of every AI-generated explanation or students' independent interactions with the technology.

The finding can be interpreted through Vygotsky's (1978) concept of mediated learning. In this context, generative AI functioned as an additional mediational resource that could provide temporary support during the learning process. Nevertheless, AI should not automatically be treated as equivalent to pedagogically informed scaffolding. Effective scaffolding requires support that is appropriate, monitored, and gradually adjusted. Therefore, teachers remained important in determining whether AI-generated explanations matched learners' needs and instructional objectives.

This finding is consistent with Moqbel (2025), who argues that AI-powered environments can provide personalized interactions and immediate instructional support. It also supports Dekhakhena's (2025) finding that generative AI can contribute to flexible learning experiences that accommodate differences in ability, preference, and pace.

The present study adds that process differentiation was not produced by AI alone. It emerged from teachers' reported accounts of students' AI use and their own decisions about when, why, and how such tools should be incorporated into instruction. Consequently, generative AI may expand opportunities for self-paced learning, but its contribution to learner autonomy remains dependent on structured guidance rather than unrestricted access.

Differentiation of Product

Product differentiation was developed from codes including "multiple output formats," "written or oral products," "student preference," and "different forms of expression." Teachers reported that generative AI helped students prepare different types of learning products according to their strengths and preferences.

Excerpt 6

"*Some students prefer writing, while others prefer speaking, and AI helps them do both.*" (Teacher 6)

The excerpt indicates that teachers recognized differences in how students preferred to demonstrate their understanding. Teachers reported using generative AI to support students in preparing written texts, oral presentations, dialogues, and other classroom products. In this way, students could work toward similar instructional objectives while expressing their learning through different formats.

Teachers reported offering learning activities involving written assignments, oral responses, dialogues, and other forms of classroom products. Generative AI was perceived as supporting students in preparing these different forms of expression. However, the study did not directly compare the quality of the different learning products or measure their effects on students' achievement.

This finding corresponds with the Universal Design for Learning principle of providing multiple means of action and expression (Meyer et al., 2014). Allowing learners to demonstrate knowledge through different formats may reduce disadvantages created by relying on a single assessment mode. However, product differentiation does not mean that assessment standards should become unclear or unequal. Teachers still need to ensure that different products are assessed according to shared learning criteria.

Previous studies have associated AI-personalized materials with student motivation, performance, and engagement (Abdelhalim & Almaneea, 2025; Tasdelen & Bodemer, 2025). However, the present study did not measure these outcomes directly. Its contribution is limited to teachers' reports that generative AI supported the preparation of different product formats and expanded students' opportunities to demonstrate learning.

Teachers' Perceptions of Support for Learner Access and Participation

This inductive theme was developed from codes such as "rehearsal before speaking," "translation support," "simplified explanation," "student confidence," "limited English proficiency," and "greater willingness to participate." Teachers reported that generative AI helped some learners prepare responses, clarify language, and access classroom content before participating in whole-class activities.

Excerpt 7

"*Students who are usually shy feel more comfortable using AI before speaking in class*." (Teacher 1)

This excerpt represents the teacher's perception that AI-assisted rehearsal helped some students prepare before speaking publicly. Rather than responding immediately in front of classmates, students could organize their ideas, check vocabulary, and practise possible responses.

The finding should not be interpreted as direct evidence that AI reduced students' anxiety because anxiety was not measured through student interviews or psychological instruments. A more appropriate interpretation is that teachers perceived that some students became more willing to participate after using AI-assisted preparation.

Excerpt 8

"*AI helps students learn vocabulary and comprehend grammar more easily. AI can translate and explain clearly*." (Teacher 3)

This excerpt indicates that teachers used generative AI to provide linguistic support, including translation, vocabulary explanation, and grammar clarification. Such support may increase learners' access to instructional content, particularly for those with limited English proficiency or those who require additional explanations.

This finding is consistent with Adeleye et al., (2024), who argue that AI-supported technologies can respond to diverse educational needs through adaptive forms of assistance. It also relates to Singh and Gupta's (2025) discussion of generative AI as a potential resource for more equitable participation. However, the present study provides a more cautious interpretation. Generative AI did not automatically create an inclusive classroom. Instead, it provided additional options that teachers could use to reduce specific language-related barriers. Its inclusive value depended on whether learners had access to appropriate devices and internet connections, whether AI explanations were accurate, and whether teachers monitored their use.

This theme also clarifies the relationship between differentiated instruction and inclusion. Differentiation concerned the adaptation of content, process, and product, while inclusion concerned learners' opportunities to access and participate in classroom learning. The findings suggest that AI-supported differentiation may contribute to inclusion when adaptations enable students with different readiness levels to engage with shared classroom objectives. Nevertheless, inclusion requires more than technological access; it also requires teacher guidance, equitable participation, and attention to learners who may not benefit equally from digital tools.

Conditions Limiting Sustainable Generative AI Integration

The inductive analysis generated three interrelated subthemes concerning the conditions that limited the implementation of generative AI: limited teacher training, infrastructure constraints, and pedagogical concerns regarding excessive reliance on AI. These challenges demonstrate that the effectiveness of generative AI depended not only on the capabilities of the technology but also on teacher competence, institutional resources, and responsible instructional management.

Limited Teacher Training

Limited teacher training was developed from codes such as "uncertainty about classroom use," "lack of pedagogical knowledge," "difficulty selecting AI tools," and "need for professional development." Although participants were familiar with generative AI, some were uncertain about how to align its use with differentiated instructional objectives.

Excerpt 9

"*I know AI tools, but I am not sure how to use them properly in teaching*." (Teacher 4)

The excerpt illustrates the difference between technological familiarity and pedagogical competence. Knowing how to access or prompt a generative AI tool did not necessarily mean that teachers knew how to evaluate its output, adapt it for particular learners, or integrate it meaningfully into lesson objectives.

This finding supports Benhammada and Meguellati's (2022) conclusion that differentiated instruction is often constrained by insufficient professional development. It also aligns with Lintangsari and Emaliana's (2020) emphasis on teacher readiness and digital competence as important conditions for technology integration. It suggests that professional development should extend beyond the technical operation of generative AI tools. Training may also need to address prompt design, output verification, ethical use, instructional alignment, and the evaluation of AI-generated language materials.

Infrastructure Constraints

Infrastructure constraints were developed from recurring codes related to unstable internet connectivity and interruptions to AI-assisted classroom activities.

Excerpt 10

"*Sometimes we cannot use AI because the internet connection is unstable*." (Teacher 5)

This excerpt demonstrates that the implementation of AI-supported instruction was dependent on basic technological infrastructure. Even when teachers had the willingness and pedagogical knowledge to use generative AI, unstable connectivity could interrupt activities and limit learners' access.

This finding supports Toboula et al., (2024), who identify technological infrastructure as a major barrier to technology-supported inclusive EFL instruction. It is also consistent with Adil's (2025) conclusion that inadequate infrastructure can hinder the sustainable integration of AI in education.

In the context of the present study, infrastructure limitations may also affect the equity of differentiated instruction. When internet connectivity is unreliable or unevenly available, AI-supported personalization may not benefit all learners consistently. Therefore, the use of generative AI should be accompanied by alternative materials and non-digital support so that learning can continue when internet access is interrupted.

Pedagogical Concerns Regarding Excessive Reliance on AI

This subtheme was developed from codes such as "dependence on AI," "reduced critical thinking," "teacher control," "independent learning," and "need for

supervision." Teachers expressed concern that students might use AI to obtain answers without engaging sufficiently in the learning process.

Excerpt 11
"*Students may rely too much on AI and not think critically*." (Teacher 2)

Excerpt 12
"*We need to control our students in using AI, so they still learn independently*." (Teacher 6)

These excerpts indicate that the participants did not view frequent AI use as automatically beneficial. They distinguished between using AI as a support for learning and using it as a replacement for students' own cognitive effort. This concern was particularly relevant when students relied on generated answers without evaluating, revising, or understanding them.

The finding is consistent with Adil (2025), who warns that excessive reliance on AI may weaken meaningful pedagogical interaction when technological use is not accompanied by teacher mediation. It also reinforces the earlier finding that generative AI was most appropriately positioned as a complementary instructional partner.

The three challenge subthemes were closely connected. Limited training could reduce teachers' ability to design responsible AI-assisted activities and evaluate generated outputs. Infrastructure problems could make implementation inconsistent and unequal. At the same time, insufficient supervision could encourage students to use AI as an answer-producing tool rather than as a learning resource. Sustainable integration therefore requires simultaneous attention to professional development, infrastructure, and pedagogical regulation.

Overall, the findings indicate that teachers perceived generative AI as supporting differentiated EFL instruction by helping them adapt content, vary learning processes, and provide different forms of learning products. Teachers also perceived that AI-assisted linguistic support and preparation could expand learners' access to classroom content and opportunities for participation. However, these reported benefits depended on teachers' pedagogical judgment, institutional resources, and responsible classroom implementation. The study contributes to existing research by positioning generative AI not as an autonomous personalized-learning system but as a teacher-mediated resource for differentiated instruction in Indonesian junior high school EFL classrooms. This distinction is important because it emphasizes that the educational value of generative AI lies not simply in its ability to generate content, but in how teachers evaluate, adapt, and integrate that content in response to learners' diverse needs.

CONCLUSION

This study explored six junior high school EFL teachers' perceptions, experiences, and reported practices regarding the use of generative AI to support differentiated instruction in inclusive classrooms. The findings indicate that teachers perceived generative AI as a complementary instructional resource that helped them adapt content, vary learning support, and assist students in preparing different learning products according to their readiness levels, interests, and learning profiles. Teachers also perceived that translation, simplified explanations, repeated clarification, and AI-assisted preparation could support learners' access to classroom content and

participation. However, these findings represent teachers' perceptions and reported practices rather than direct evidence of improvements in students' confidence, engagement, autonomy, critical thinking, or learning outcomes.

The implementation of generative AI was constrained by limited teacher training, unstable internet connectivity, and concerns regarding students' excessive reliance on AI. These findings highlight the importance of teacher mediation, professional competence, technological support, and responsible instructional management. Educational institutions may use the findings as preliminary considerations for professional development and discussions concerning responsible AI-assisted language learning, although this study did not develop or evaluate formal guidelines. Given the small number of participants and the reliance on teacher-reported data, future research should include students' perspectives, classroom observations, document analysis, and direct measures of language-learning outcomes.

REFERENCES

Abdelhalim, S. M., & Almaneea, M. O. (2025). Generative AI-supported project-based learning in EFL: Impacts on student engagement and learner agency. *Forum for Linguistic Studies*, 7(9), 953–971. https://doi.org/10.30564/fls.v7i9.10855

Adeleye, O. O., Eden, C. A., & Adeniyi, I. S. (2024). Innovative teaching methodologies in the era of artificial intelligence: A review of inclusive educational practices. *World Journal of Advanced Engineering Technology and Sciences, 11*(02), 069–079. https://doi.org/10.30574/wjaets.2024.11.2.0091

Adil, J. G. (2025). AI in education: A systematic literature review of emerging trends, benefits, and challenges. *Seminars in Medical Writing and Education, 4*, 795. https://doi.org/10.56294/mw2025795

Benhammada, L., & Meguellati, I. E. (2022). Differentiated instruction and inclusive education in EFL classrooms: The case of third year EFL students at Mila University Center [Master's thesis, Abdelhafid Boussouf University Center - Mila]. Institutional Repository.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Cárdenas-Barón, L. V., Santoyo-Roldán, D. V., & Carrillo-Cruz, C. E. (2025). ICT inclusion strategy for teaching speaking intonation to students with visual impairment in an EFL classroom. *Revista Aletheia, 17*(2), 1–18. https://doi.org/10.11600/ale.v17i2.848

Creswell, J. W. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (4th ed.). SAGE.

Cruz, C., Garzón, F., & Gutierrez, H. (2023). Inclusive education strategies for the EFL teaching context. *Revista Boletín Redipe. 12*(11). 53-62. https://doi.org/10.36260/rbr.v12i11.2040

Dekhakhena, A. (2025). AI-powered personalized learning in EFL acquisition: Exploring adaptive instruction and feedback systems. *Journal of Studies in Language, Culture, and Society (JSLCS)*, 8(1), 111-131. https://doi.org/10.20885/jslcs.v8i1.40446

Dewi, A. R., Saehu, A., & Budiman, R. (2021). Students' perception of computer-based testing Edubox- and its impact on their English learning motivation. *Indonesian Journal of Learning and Instruction, 4*(1), 19–28. https://doi.org/10.25134/ijli.v4i1.4341

Eden, C. A., Chisom, O. N., & Adeniyi, I. S. (2024). Integrating AI in education: Opportunities, challenges, and ethical considerations. *Magna Scientia Advanced Research and Reviews, 10*(02), 006–013. https://doi.org/10.30574/msarr.2024.10.2.0039

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. Basic Books.

Gheyssens, E., Griful-Freixenet, J., & Struyven, K. (2023). Differentiated instruction as an approach to establish effective teaching in inclusive classrooms. In Maulana, R., Helms-Lorenz, M., Klassen, R.M. (Eds.) *Effective teaching around the world*. Springer, Cham. https://doi.org/10.1007/978-3-031-31678-4_30

Guan, L., Lee, J. C. K., Zhang, Y., & Gu, M. M. (2025). Investigating the tripartite interaction among teachers, students, and generative AI in EFL education: A mixed-methods study. *Computers and Education: Artificial Intelligence*, 8, 100384. https://doi.org/10.1016/j.caeai.2025.100384

Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning* (1st ed.). Center for Curriculum Redesign.

Lee, T.-K., & Hung, A. C. Y. (2025). Implementing differentiated instruction through lesson study: Reflections from Taiwanese EFL teachers. *International Journal of Educational Research*, *133*, 102720. https://doi.org/10.1016/j.ijer.2025.102720

Li, D., & Samah, N. A. (2025). Generative AI in inclusive classrooms: Enhancing social interactions, personalised learning, and metacognitive skills. *Sodobna Pedagogika/Journal of Contemporary Educational Studies, 76*(142), 155–176. https://doi.org/10.63384/spB52z813a

Limiya, A., & Kumar, P. N. S. (2025). Generative artificial intelligence in enhancing English language skills: A systematic review. *Studies in Media and Communication*, 13(4), 256–276. https://doi.org/10.11114/smc.v13i4.7763

Lintangsari, A. P., & Emaliana, I. (2020). Inclusive education services for the blind: Values, roles, and challenges of university EFL teachers. *International Journal of Evaluation and Research in Education (IJERE), 9*, 439–447. https://doi.org/10.11591/ijere.v9i2.20436

López-Molines, L. (2025). A systematic review of generative artificial intelligence-based tools to improve oral skills in English as a foreign language. *The EuroCALL Review, 32*(2), 183–195. https://doi.org/10.4995/eurocall.2025.23941

Luckin, R. (2018). *Machine learning and human intelligence: The future of education for the 21st century*. UCL IOE Press.

Mardhatillah, M., & Suharyadi, S. (2023). Differentiated instruction: Challenges and opportunities in EFL classrooms. *Journal of English Language Teaching and Linguistics, 8*(1), 69–77. https://doi.org/10.21462/jeltl.v8.i1.1022

Masitoh, F., & Istiqomah, F. (2023). Mapping an EFL teacher's technology integration and challenges in online teaching to a student with special needs. In *Proceedings of the 2nd International Conference on Social Knowledge Sciences and Education (ICSKSEN 2022)* (pp. 104–112). Atlantis Press/Springer Nature. https://doi.org/10.2991/978-2-38476-052-7_12

Meyer, A., Rose, D. H., & Gordon, D. (2014). *Universal design for learning: Theory and practice*. CAST.

Moqbel, M. S. S. (2025). Impact of AI-based personalized English learning on cognitive offloading and formal curriculum. *Journal of English Studies in Arabia Felix*, 4(2), 50-64. https://doi.org/10.56540/jesaf.v4i2.127

Piaget, J. (1970). *The Science of Education and the Psychology of the Child*. Viking Press.

Purnamaningwulan, R. A., & Purwanto, A. R. (2025). Differentiated instruction strategies to enhance EFL learning in a mixed-proficiency seventh-grade classroom. *Elsya: Journal of English Language Studies*, *7*(1), 1–22. https://doi.org/10.31849/elsya.v7i1.22076

Sakina, R., & Astuti, R. S. (2024). Using Duolingo application in learning vocabulary: A descriptive qualitative study at the fifth grade of an elementary school in Sumedang. *Biormatika: Jurnal Ilmiah Fakultas Keguruan dan Ilmu Pendidikan*, *10*(2), 131–145.

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health, 23*(4), 334–340. https://doi.org/10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-

Singh, A., & Gupta, P. (2025). Perspective of Generative AI for UNESCO Inclusive Education. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.5181859

Szabó, F., & Szoke, J. (2024). How does generative AI promote autonomy and inclusivity in language teaching? *ELT Journal, 78*. https://doi.org/10.1093/elt/ccae052

Tafazoli, D. (2024). Exploring the potential of generative AI in democratizing English language education. *Computers and Education: Artificial Intelligence*, 7, 100275. https://doi.org/10.1016/j.caeai.2024.100275

Tasdelen, O., & Bodemer, D. (2025). Generative AI in the classroom: Effects of context-personalized learning material and tasks on motivation and performance. *International Journal of Artificial Intelligence in Education*, 35, 3049–3070. https://doi.org/10.1007/s40593-025-00491-9

Toboula, C., Hounnou, A. M., & Videkon, B. (2024). Evaluating inclusive EFL instruction for visually impaired students in Beninese secondary schools. *ELE Reviews: English Language Education Reviews, 4*, 118–143. https://doi.org/10.22515/elereviews.v4i2.9661

Tomlinson, C. A. (2001). *How to differentiate instruction in academically diverse classrooms*. ASCD.

UNESCO. (2005). *Education for all: The quality imperative*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000138264

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press.

Yatağanbaba, E., & Gümüş, Ö. (2024). A guideline for the use of recent inclusive practices in EFL higher education contexts. *Adiyaman University Journal of Educational Sciences, 14*(1), 47–61. https://doi.org/10.17984/adyuebd.1454615

Yudhiantara, R., & Saehu, A. (2017). Mobile-assisted language learning (MALL) in Indonesian Islamic higher education. *IJELTAL (Indonesian Journal of English Language Teaching and Applied Linguistics), 2*, 52. https://doi.org/10.21093/ijeltal.v2i1.52

Zaim, M., Arsyad, S., Waluyo, B., Ardi, H., Al Hafizh, M., Zakiyah, M., Syafitri, W., Nusi, A., & Hardiah, M. (2024). AI-powered EFL pedagogy: Integrating generative AI into university teaching preparation through UTAUT and activity theory. *Computers and Education: Artificial Intelligence*, 7, 100335. https://doi.org/10.1016/j.caeai.2024.100335

Zaim, M., Arsyad, S., Waluyo, B., Ardi, H., Al Hafizh, M., Zakiyah, M., Syafitri, W., Nusi, A., & Hardiah, M. (2025). Generative AI as a cognitive co-pilot in English

language learning in higher education. *Education Sciences, 15*(6), 686. https://doi.org/10.3390/educsci15060686

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019**).** Systematic review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education, 16*, Article 39. https://doi.org/10.1186/s41239-019-0171-0