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HUMAN-CENTERED AI IN LANGUAGE CLASSROOMS

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ABSTRACT

This qualitative case study investigated how teachers and students at senior high schools in Banda Aceh experience the integration of artificial intelligence (AI) tools in classroom-based language learning. Adopting a human-centered perspective, the study addressed two primary questions: (1) how do teachers navigate their roles when integrating AI into classroom instruction, and (2) what are students' experiences of receiving AI-generated feedback in a teacher-guided learning environment? Data were collected through semi-structured interviews with English teachers, Focused-Group Discussions (FGDs) with students, and classroom observations. Thematic analysis was applied to identify emerging patterns across data sources. The findings indicate that teachers serve as facilitators, interpreters, and ethical decision-makers in the use of AI, consciously adapting AI-generated feedback to suit student abilities, classroom dynamics, and instructional goals. While they value the efficiency and personalized support AI offers, teachers remain central in guiding students through the feedback and ensuring pedagogical alignment. Students generally perceive AI feedback as helpful, especially for grammar and writing tasks, yet they often rely on teachers to clarify or validate the suggestions. Their confidence and motivation in using AI tools increase when teachers provide clear guidance and frame AI as part of an interactive learning process. This study affirms the importance of a human-centered approach to AI integration in education, where technology enhances—not replaces—teacher-student interaction. The study recommends targeted teacher training, collaborative AI design, and policy support to ensure ethical and meaningful classroom implementation. Its limitations include a single-site focus and non-generalizable scope.

Keywords: *AI Feedback, artificial intelligence, educational technology, human-centered Learning, language education*

1. INTRODUCTION

The integration of Artificial Intelligence (AI) into educational settings has introduced both promising opportunities and emerging challenges. From automated assessment to intelligent tutoring systems, AI tools have rapidly evolved to offer efficiency and support for teachers and learners (Kusumaninrum & Hafida, 2021). However, much of the discourse around AI in education is still dominated by technology-centered perspectives, emphasizing automation and efficiency, rather than the preservation of pedagogical values, teacher agency, and human interaction. In Indonesian classrooms, particularly in SMA (senior high schools) and SMK (vocational high schools), the use of educational technology is on the rise, but the role of teachers remains deeply central to the learning process. The integration of artificial intelligence (AI) and educational technology into language learning has transformed how students engage with content, practice skills, and receive feedback (Ismail & Sabrina, 2023). In traditional language classrooms, learning is often limited by time, teacher availability, and the capacity for individual attention (Holden et al., 2021). However, with the emergence of digital platforms and AI-powered tools, learners now have access to personalized, interactive, and adaptive learning experiences. Technologies such as intelligent tutoring systems, automated essay scoring tools, voice recognition software, and conversational agents (like ChatGPT) have opened new possibilities for learners to receive instant feedback, practice speaking and writing, and engage with authentic language use in real time (Jamilah et al., 2024). AI in language education does more than just automate tasks—it also enables a shift toward personalized learning, where instructional materials and feedback are tailored to the specific needs, progress, and preferences of each learner (Syahputri et al., 2024). For instance, AI can identify patterns in student errors, adapt difficulty levels, and provide targeted exercises that align with the learner's current proficiency level. In English as a Foreign Language (EFL) contexts, these features are especially valuable for supporting autonomous learning and addressing the diverse needs of students with varying linguistic backgrounds (Kaisara & Bwalya, 2024).

Despite these advantages, the use of AI in language learning must be approached critically. Concerns around accuracy, bias, privacy, and overreliance on automated feedback remain ongoing discussions. Therefore, a human-centered approach—where AI complements, rather than replaces, the teacher's role—is essential. When thoughtfully integrated, AI and technology can become powerful allies in supporting more responsive, engaging, and effective language learning environments. While artificial intelligence offers powerful tools for enhancing language learning, its true value lies in how it is implemented—especially when guided by a human-centered approach. Human-centered AI emphasizes the importance of keeping teachers and learners at the core of the educational process. Rather than fully automating instruction, this approach positions AI as a supportive partner that enhances, rather than replaces, human judgment and interaction (Melanie Surya & Moramowati, 2023). In language learning, where communication, empathy, and contextual understanding are critical, the role of the teacher remains irreplaceable. Human-centered AI systems are designed with teacher input, pedagogical goals, and classroom realities in mind, ensuring that technological tools are aligned with the needs of both students and educators. For example, AI can assist in providing real-time grammar feedback or pronunciation assistance, but it is the teacher who interprets this data, contextualizes it, and uses it to shape meaningful instruction. In this model, AI becomes a tool for amplifying human decision-making, not overshadowing it (Darmawati, 2018). This is particularly important in culturally diverse classrooms, where sensitivity, scaffolding, and learner engagement require a human touch. By prioritizing ethical design, accessibility, and teacher agency, human-centered AI can help create more inclusive, empowering, and learner-responsive language education environments.

There is a growing need for research that captures how AI can be implemented in ways that complement—rather than replace—the judgment, empathy, and instructional strategies of teachers. In other words, a human-centered approach is needed—where AI tools are designed to support teacher decision-making, respect classroom realities, and enhance the learning experience without overshadowing the human elements of education. Existing literature tends to emphasize top-down implementation of AI systems, which may lead to resistance or underutilization by educators who feel their roles are being sidelined (Ismail, 2017). Few studies have examined how AI can be meaningfully integrated into classroom environments in a way that enhances—rather than diminishes—teacher agency, relational learning, and instructional flexibility. Furthermore, little is known about how students in these settings experience AI-generated feedback and how it shapes their learning motivation and autonomy.

This study aims to explore how teachers and students experience AI tools in real classroom contexts. Focusing on feedback practices, the research will investigate how AI can assist in providing personalized learning support while still enabling teachers to maintain control over the learning process. Rather than evaluating AI in terms of technical performance alone, the study will emphasize perceptions, lived experiences, and emerging classroom dynamics when AI is introduced as a supportive partner in the learning journey. The novelty of this research lies in its highlight on the cultural and contextual factors that shape how AI tools are received and used in Indonesian schools. Through this lens, the study contributes to the broader discussion on ethical and pedagogically aligned uses of AI—framing technology not as a replacement, but as a human-guided educational ally.

2. METHODS

2.1 Research Design

This study adopted a qualitative case study approach to explore how AI tools are perceived, experienced, and integrated in classroom-based language learning, with a focus on preserving the human-centered values of teaching. The case study design was appropriate as it enabled in-depth exploration of contextual factors, practices, and individual perspectives within a bounded system, namely a single school or a set of classroom environments where AI has been introduced.

2.2 Research Participants

This research was conducted in Banda Aceh, where English teachers have begun experimenting with AI-based tools, such as AI-assisted feedback applications or writing assistants. Participants included 15 English teachers and 25 students from 6 high-schools in Banda Aceh. They are regularly involved in classroom activities that incorporate AI-supported instruction.

2.3 Research Instruments

To collect rich and contextually grounded data, this study used three types of research instruments: an interview guide for teachers, a Focused-Group Discussion (FGD) guide for students, and a classroom observation sheet (Miles et al., 2014). Each instrument was designed to align with the research purpose—exploring how human-centered AI is perceived and practiced in classroom settings.

The interview guide is developed to explore teachers' experiences, beliefs, and classroom practices related to the integration of AI tools in language learning. The substance of the interview includes several key domains: (1) teachers' understanding and familiarity with AI in education; (2) their motivations and concerns regarding the use of AI tools; (3) their classroom decision-making processes when using AI for feedback or instruction; and (4) the perceived impact of AI on their roles as educators. The interviews also explore how teachers balance automation with pedagogical judgment, and how they adapt AI suggestions to suit individual student needs. Semi-structured interviews are chosen to allow flexibility while ensuring that core themes are consistently addressed across participants.

The Focused-Group Discussion (FGD) guide targets students' perspectives on the use of AI in the classroom, particularly in relation to feedback and learning experiences. The FGD guide includes questions around (1) students' experiences in receiving feedback from AI-based tools (e.g., spelling correction, writing analysis, translation assistance); (2) how they feel about the usefulness, clarity, and fairness of AI feedback; (3) their preferences between teacher feedback and AI-generated feedback; and (4) how AI affects their motivation, confidence, and engagement in learning English. The group setting of the FGD is designed to stimulate peer interaction and encourage students to reflect on shared experiences, allowing researchers to explore group dynamics and collective perceptions.

The classroom observation sheet was used to document the actual integration of AI tools during teaching and learning sessions. This instrument focused on capturing: (1) how teachers introduce and manage AI-supported tasks; (2) student responses and interactions with AI systems; (3) the balance between human instruction and AI support; and (4) any visible patterns in classroom dialogue or activity flow that reflect the role of AI. Field notes were also used to record spontaneous events, reactions, or tensions that arise during lessons. These observations complemented interview and FGD data, helping to triangulate findings and deepen contextual understanding.

2.4 Data Collection and Data Analysis

In terms of data collection techniques, this study employed three qualitative methods to gather in-depth information: semi-structured interviews with teachers, focus group discussions (FGDs) with students, and classroom observations. Each technique is selected to capture the human-centered dimension of AI integration in language learning and to triangulate perspectives from different stakeholders.

First, semi-structured interviews with teachers were conducted to explore their perceptions, teaching strategies, and classroom experiences involving AI tools. The interviews aimed to understand how teachers interpret the role of AI in supporting or challenging their instructional roles, how they adapt their teaching practices when using AI-generated feedback, and how they manage the balance between automation and human judgment. The interviews also delved into teachers' motivations, hesitations, and contextual considerations, such as student readiness, curriculum alignment, and infrastructure support. The flexible format of semi-structured interviews allowed the researchers to probe deeper based on each teacher's unique experience, while still covering key thematic areas across participants.

Second, Focused-Group Discussions (FGDs) with students were designed to capture their experiences of receiving AI-generated feedback, their engagement in AI-assisted tasks, and their general views on the presence of AI in the learning process. Students were asked to reflect on how AI tools, such as automated grammar checkers, writing suggestion platforms, or translation apps, help or hinder their learning. The FGDs also sought to understand students' preferences between human and AI feedback, their perceived clarity and usefulness of AI responses, and how these tools influence their motivation, self-confidence, and participation in class. Conducting the discussions in a group setting allowed students to build on each other's responses, uncover shared concerns or appreciations, and articulate collective perceptions.

Lastly, classroom observations were carried out to examine how AI tools are actually used in practice. The focus is on real-time classroom behaviors, including how teachers introduce and implement AI tools, how students interact with them, and how AI fits into the flow of instruction. Observations paid close attention to classroom dynamics, such as the distribution of attention between teacher and technology, the quality of student engagement, and any challenges that arise during AI-assisted activities. Field notes and observation sheets helped capture not only observable behaviors but also the subtle interactions and adjustments that occurred as teachers and students navigate AI in a human-centered learning environment.

All data were analyzed using thematic analysis. Transcripts from interviews and Focused-Group Discussions were coded to identify key themes such as teacher agency, personalization, usability, trust, and perceived effectiveness. Triangulation across data sources was used to enhance the validity of the findings.

This study prioritized ethical research practices. As agreed by the participants, informed consent was carefully obtained from all participants, and pseudonyms were securely used to ensure anonymity. By focusing on real-world classroom use and centering teachers' voices, this study aimed to provide a grounded and human-centered understanding of AI's role in contemporary language education.

3. RESULTS

This section presents the findings of the study related to how teachers navigate their roles while integrating AI tools into classroom learning activities and student experiences with AI feedback in a human-guided classroom setting. Data were collected through semi-structured interviews with teachers, Focused-Group Discussions with students, and classroom observations.

3.1 Teacher Roles in the Integration of AI Tools in Classroom Learning

The results are organized into three subsections based on each data source to highlight distinct yet complementary insights into the evolving roles of teachers and student experiences in human-centered AI environments.

Initially, teachers described a complex, adaptive process of navigating their roles when integrating AI into classroom instruction. Most participants positioned themselves not as passive users of technology, but as active decision-makers who selectively mediated the use of AI tools to meet instructional goals. For example, one teacher explained, *"I don't just let the AI give answers. I read the feedback first, then decide if it fits with my lesson objectives or not."* This highlights that teachers often served as gatekeepers, determining what AI-generated feedback was pedagogically appropriate before presenting it to students. Many teachers viewed AI as a "co-teacher" or "assistant", helping them manage repetitive tasks such as grammar correction, vocabulary suggestions, and writing feedback. However, they also emphasized their continued responsibility in contextualizing that feedback and scaffolding student understanding. Several teachers shared strategies for this, such as projecting AI feedback on the board and discussing it together with the class, or modifying AI outputs into simpler forms before giving them to students. Teachers also navigated ethical concerns and control by setting clear boundaries. Some disabled certain AI features during assessments to prevent over-reliance, while others designed reflection tasks that required students to critically evaluate AI-generated suggestions. This reflects a strong effort to preserve pedagogical integrity while adopting digital tools.

Later, from the FGD results, students confirmed that teachers maintained a strong presence even when AI tools were used. They shared that most AI activities were teacher-directed and guided, especially in the early stages. One student commented, *"Our teacher doesn't just give us the AI result. She explains what it means, or sometimes tells us to ignore it if it's too confusing."* This points to the teacher's role as a translator of AI feedback, reinforcing their central function in learning. Students also perceived the teacher as a motivator and filter, especially when the AI gave overly critical or unclear feedback. While many students found AI helpful, they still relied on teachers to validate or explain it. This dynamic revealed that even when AI was present, students saw the teacher as their main learning authority.

The other results, which are observations, supported the narrative that teachers were actively managing the AI integration process, rather than surrendering their roles to technology. In multiple sessions, teachers introduced AI tools deliberately, with clear learning goals, and consistently paused to explain, clarify, or reframe AI outputs. One observed teacher asked students to compare AI feedback with their own revisions and reflect on which suggestions they would accept and why, showing how teachers integrated metacognitive strategies alongside technology use. The observation also showed that the teacher–student relationship remained central. Students often asked teachers for clarification even after receiving AI feedback, and teachers routinely encouraged discussion, explanation, and peer feedback to reinforce concepts that AI tools flagged. In some cases, teachers adjusted lesson pacing depending on how students responded to AI input, demonstrating pedagogical agility in adapting to real-time feedback environments.

3.2 Student Experiences with AI Feedback in a Human-Guided Classroom Setting

The findings are presented based on student interviews, focus group discussions (FGDs), and classroom observations, capturing both individual experiences and collective patterns in the use of AI-assisted feedback in a teacher-led environment.

First, student interviews revealed a wide range of experiences with AI-generated feedback in the classroom. Many students expressed appreciation for the immediacy and clarity of AI feedback, particularly in writing tasks where grammar, structure, and vocabulary usage were flagged automatically. Students mentioned that this allowed them to make quick corrections and learn from mistakes more independently. One student shared, *"I like that it tells me what's wrong right away. It's faster than waiting for the teacher to check everything."* However, several students also noted that some AI feedback was too complex or vague, making it difficult to understand without additional guidance. This was especially the case with explanations that used advanced grammatical terms or unclear scoring systems. Students consistently emphasized the importance of their teacher in interpreting and validating the AI feedback. Many shared that they often checked with the teacher before applying a suggested correction or relied on the teacher to simplify AI comments. One student said, *"Sometimes I don't trust AI completely. I still ask my teacher if it's right".* This shows that while AI tools are used, students still rely heavily on teacher confirmation and interpretation, highlighting the central role of human guidance in the process.

Second, the FGDs provided a deeper understanding of how students interact with AI feedback socially and emotionally. Students shared that they felt more motivated and independent when they received quick responses from AI tools, especially in tasks where immediate correction helped them improve without waiting for grading. However, several students expressed mixed emotions about the accuracy and tone of AI feedback. While some found it helpful, others described it as "robotic" or "too blunt," which could reduce confidence. Students highlighted that when AI feedback was accompanied by teacher explanation or encouragement, it felt more useful and less intimidating. The group discussions also revealed peer learning behaviors, where students often compared AI feedback results with each other and collectively discussed what the feedback meant, especially when teachers were not immediately available.

Last, observational data confirmed that students actively engaged with AI feedback during classroom activities, but their use was often shaped by teacher facilitation. In observed sessions, teachers guided students through interpreting AI comments by discussing examples on the screen, modeling how to revise sentences, or

inviting questions. It was common to see students pausing after receiving AI feedback to look toward the teacher for validation or further explanation. In some cases, students ignored or misunderstood AI suggestions until the teacher intervened. This demonstrates that while AI supports real-time correction, its effectiveness depends heavily on teacher mediation and student digital literacy. The observations also revealed that students were more responsive to AI feedback when it was embedded into meaningful learning tasks, such as writing reflections, peer reviews, or project-based assignments. In these cases, the feedback was not seen as judgmental but as part of an ongoing learning dialogue, with the teacher acting as a facilitator rather than just an evaluator.

4. DISCUSSION

The findings of this study align with recent research emphasizing the importance of human-centered AI integration in education. Tyagi et al. (2023) highlighted that AI should augment, not replace, human instruction, ensuring that teachers remain central to the learning process. Similarly, Febrianti et al. (2025) found AI applications that support teachers and personalize learning while maintaining ethical standards. Observations from this study, where teachers mediate AI feedback to suit student needs, reflect these principles. Students' reliance on teachers to interpret AI feedback underscores the necessity of human guidance in AI-enhanced classrooms. This is consistent with the finding from Arani (2024) that AI should enhance human-led teaching, promoting equity and personalized learning. Furthermore, the study's findings resonate with the insights that the need for AI systems that are transparent and designed with input from educators to ensure they meet classroom realities (Silva et al., 2023).

While AI tools offer immediate feedback and personalized learning opportunities, this study reaffirmed that their effectiveness is maximized when integrated thoughtfully, with teachers guiding their use to align with pedagogical goals and student contexts. This human-centered approach ensures that AI serves as a valuable ally in education, enhancing learning without diminishing the pivotal role of educators.

5. CONCLUSION

This study explored how teachers navigate their roles in integrating AI tools into classroom learning activities and how students experience AI-generated feedback in a human-guided setting. Findings reveal that teachers do not passively adopt AI tools; instead, they actively position themselves as mediators, facilitators, and ethical decision-makers. While they appreciate the efficiency and personalization offered by AI, teachers consistently emphasize the need to filter, adapt, and contextualize AI-generated feedback to suit their students' needs, language levels, and curriculum goals. Their role remains central in guiding how AI tools are introduced, interpreted, and embedded into classroom learning.

Students, on the other hand, express mixed yet generally positive experiences in receiving feedback from AI tools. They find the immediacy and clarity of feedback beneficial for self-correction and independent learning. However, many rely on teacher validation and interpretation to fully understand or trust AI suggestions. Students engage more meaningfully with AI feedback when it is framed as part of a collaborative, reflective learning process, underscoring the importance of the teacher's role in making AI feedback accessible, meaningful, and supportive.

The implication of this study suggests that AI tools should be integrated in ways that enhance teacher agency and preserve the relational, contextual nature of teaching. Professional development for teachers should focus not only on technical training but also on critical use of AI, helping them become designers of meaningful AI-assisted instruction. Curriculum planners and EdTech developers should involve teachers early in the design process to ensure that tools are usable, relevant, and adaptable to diverse classroom needs. However, this study was limited to one area only and involved a relatively small number of participants. The focus was on English language learning; thus, findings may not fully generalize to other subjects or school levels. Additionally, the study explored perceptions and observed practices, but did not quantitatively measure learning outcomes or long-

term effects. Future studies could expand the scope across different school contexts and integrate mixed-method approaches to strengthen the impact of the findings.

Author Declaration on AI Use

The authors declare that this article involved the use of artificial intelligence (AI), specifically the Perplexity AI platform, during the early stages of writing. AI was utilized strictly for brainstorming ideas, refining wording, and editing sentence structure. All content generated through AI was critically reviewed, modified, and curated by the authors to ensure clarity, relevance, and academic integrity.

The authors remain fully responsible for the intellectual content, arguments, interpretations, and final structure of this work. Any parts suggested by the AI that were deemed inappropriate, inaccurate, or irrelevant were removed or rewritten by the authors. The AI was not used to generate or analyze research data, nor to write full sections independently.

This use of AI adheres to ethical guidelines, and the final version represents the authors' original academic contributions.

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