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Perceptions of Teachers Using AI-Based Tools in English Language Teaching at Elementary Schools

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ABSTRACT

This qualitative case study investigates elementary school English teachers' perceptions of and challenges in integrating Artificial Intelligence (AI)-based tools into English language teaching. Although the rapid development of AI technologies offers new opportunities for enhancing language learning, limited research has focused on how elementary school teachers perceive and experience the use of these tools in classroom practice. Therefore, this study aims to explore teachers' attitudes toward AI-based tools and to identify the challenges they encounter during implementation. Data were collected from six elementary school English teachers through semi-structured interviews, classroom observations, and document analysis. The data were analyzed using thematic analysis to identify recurring patterns and key themes related to AI integration in English language teaching. The findings indicate that teachers generally perceive AI-based tools as beneficial for increasing student engagement, supporting individualized learning, and improving teaching efficiency. AI tools such as ChatGPT, Google Translate, Canva, and Quizizz were commonly used to assist lesson planning, material development, and interactive learning activities. However, several challenges were also identified, including limited technological infrastructure, insufficient teacher training, students' over-reliance on AI tools, and concerns related to data privacy and content accuracy. In conclusion, the study highlights that the effective integration of AI in elementary English language teaching requires not only access to technology but also continuous professional development and institutional support. The findings provide practical implications for teachers, school administrators, and policymakers in developing balanced and responsible strategies for AI adoption in primary English language education.

Key Word *Elementary Education, Artificial Intelligence (AI), Teacher Perceptions, AI Integration, Language Teaching Challenges.*

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INTRODUCTION

In today's era of globalization, rapid technological advancements particularly in Artificial Intelligence (AI) have significantly transformed various

sectors, including education, and continue to reshape teaching practices and professional demands for educators (Muyunda, 2022). AI has evolved into a powerful technology capable of simulating human intelligence through automated decision-making, adaptive feedback systems, and personalized learning pathways that respond to learners' needs (Wang et al., 2024). In educational contexts, AI is increasingly recognized as an innovative tool that can enhance instructional effectiveness, promote flexible learning environments, and support individualized learning experiences (Oyebola Olusola Ayeni et al., 2024). At a broader policy level, AI is also viewed as a transformative force capable of improving educational quality and equity when implemented responsibly and ethically (OECD, 2019). However, scholars emphasize that AI should not be perceived merely as a technical solution but as a pedagogical tool requiring critical evaluation and thoughtful integration into classroom practice (Selwyn, 2024).

The integration of AI is particularly evident in English Language Teaching (ELT), where digital tools are increasingly used to facilitate the development of core language skills, including reading, writing, listening, and speaking (Hartono et al., 2023). AI-powered applications such as automated writing evaluation systems, machine translation tools, conversational chatbots, and gamified learning platforms provide learners with immediate feedback and extended opportunities for practice beyond classroom hours. Research suggests that such tools can enhance learner engagement, reduce language anxiety, and support individualized instruction when aligned with pedagogical objectives (Nguyen et al., 2025; Ozdemir et al., 2024). Recent empirical studies further indicate that teachers generally perceive AI tools as supportive resources that promote interactive and student-centered learning experiences (Basheer C., 2025; Mardhiyya et al., 2025). Systematic reviews confirm that AI-driven personalization contributes positively to learning outcomes when integrated with sound instructional design and active teacher mediation (Wang et al., 2024; (Zawacki-Richter et al., 2019).

Despite these promising developments, teachers remain central to determining the effectiveness of AI integration in educational settings. Teachers' beliefs, experiences, and pedagogical competencies significantly influence whether AI technologies are implemented meaningfully or superficially (Holmes et al., 2019). The Technological Pedagogical Content Knowledge (TPACK) framework highlights that effective technology integration requires the intersection of technological knowledge, pedagogical expertise, and content mastery (Mishra & Koehler, 2006). Research indicates that positive teacher perceptions and adequate preparation facilitate technology

adoption, whereas limited confidence, insufficient training, or unclear institutional policies may hinder implementation (Kun Qi, 2025; Velander et al., 2024). Therefore, understanding teachers' perceptions is crucial for designing professional development programs and ensuring that AI-based instructional media align with students' learning needs and classroom contexts (Kurniati et al., 2023).

In elementary school contexts, the integration of AI-based tools presents both opportunities and distinctive challenges. On the one hand, AI applications can support visually engaging materials, vocabulary development, pronunciation practice, and interactive classroom activities appropriate for young learners (Hartono et al., 2023). On the other hand, infrastructural constraints such as limited digital devices, unstable internet connectivity, and insufficient institutional support remain significant barriers, particularly in under-resourced or rural settings (Nava et al., 2025; Yusuf, 2025). Previous studies focusing on primary education contexts often emphasize technological potential rather than teachers' lived experiences and classroom realities (Zulkarnain & Md Yunus, 2023). Furthermore, ethical considerations—including data privacy, content accuracy, algorithmic bias, and responsible AI use—raise additional concerns when technologies are introduced to young learners (OECD, 2019; Selwyn, 2024). Another emerging issue involves students' over-reliance on AI-based tools for translation and task completion, which may limit the development of critical thinking and independent language production skills (Kurniawan Barus et al., 2025). Without clear pedagogical guidance, AI risks being underutilized or misapplied, rather than supporting meaningful, mindful, and engaging learning experiences (Feriyanto & Anjariyah, 2024).

Although a growing body of literature has examined AI integration in education and ELT, much of the existing research focuses on secondary and higher education settings (Nguyen et al., 2025; Ozdemir et al., 2024); Wang et al., 2024). Empirical investigations that specifically explore elementary school English teachers' perceptions, readiness, and contextual challenges remain comparatively limited (Velander et al., 2024; Zulkarnain & Md Yunus, 2023). Moreover, many studies prioritize technological effectiveness rather than teachers' pedagogical reasoning and day-to-day instructional practices. This gap underscores the need for qualitative research that captures teachers' lived experiences and provides context-sensitive insights into AI integration at the primary level.

In response to this gap, the present study aims to explore elementary school English teachers' perceptions of AI-based tools and to identify the

challenges they encounter when integrating these technologies into classroom instruction. Specifically, this study seeks to answer the following research questions: (1) How do elementary school English teachers perceive the incorporation of AI-based tools in English language learning? and (2) What challenges do they experience when implementing AI-based tools in their teaching practice? By focusing on the elementary school context, this study contributes empirical evidence to an underexplored area of AI research in language education and provides practical implications for teachers, school leaders, and policymakers in developing balanced, ethical, and pedagogically sound strategies for AI adoption in primary English language teaching.

RESEARCH METHOD

This study employed a qualitative case study design to explore elementary school English teachers' perceptions of and experiences with the use of Artificial Intelligence (AI)-based tools in English language teaching. A qualitative approach was considered appropriate because it enables an in-depth understanding of participants' perspectives, beliefs, and practices within a real educational context (Creswell, 2014; Yin, 2018). Case study research is particularly suitable for examining contemporary phenomena within their real-life settings, especially when the boundaries between the phenomenon and context are not clearly evident (Baxter & Jack, 2015).

The participants of this study consisted of six elementary school English teachers selected through purposive sampling. All participants had more than four years of teaching experience and were actively involved in English instruction at primary schools located in the same village. Purposive sampling was employed to ensure that participants possessed sufficient pedagogical experience and direct exposure to classroom practices involving AI-based tools, thereby enhancing the relevance and depth of the data collected (Cohen et al., 2017).

Data were collected using three qualitative data collection techniques: semi-structured interviews, classroom observations, and document analysis. Semi-structured interviews were chosen because they allow researchers to maintain focus on predetermined research objectives while providing flexibility to explore emerging themes during the interaction (DiCicco-Bloom & Crabtree, 2006; Kallio et al., 2016). The interviews were conducted face-to-face and lasted approximately 45–60 minutes for each participant. The interview questions focused on teachers' perceptions, experiences, benefits, and challenges related to the use of AI-based tools in English language teaching.

Classroom observations were conducted to examine the actual implementation of AI-based tools in teaching practice, particularly teacher–student interactions, instructional strategies, and challenges encountered during classroom activities. Observational data provided contextual insights that complemented interview findings and helped capture authentic classroom dynamics (Angrosino, 2007; Cohen et al., 2017). Each teacher was observed during three classroom sessions to obtain a comprehensive understanding of AI integration across different instructional contexts.

In addition, document analysis was employed to support and triangulate data obtained from interviews and observations. Relevant documents such as lesson plans, instructional materials, and school policies related to technology use were examined. Document analysis is recognized as an effective qualitative research method for providing contextual background information and corroborating evidence from multiple data sources (Bowen, 2009).

Data analysis was conducted using thematic analysis, following the systematic procedures proposed by Braun and Clarke (2006). The analysis involved familiarization with the data, initial coding, searching for themes, reviewing themes, and defining and naming themes. This approach was selected because it allows researchers to identify recurring patterns and meaningful themes across qualitative data sets. To enhance the trustworthiness and rigor of the analysis, the criteria of credibility and consistency were considered throughout the coding and interpretation process (Nowell et al., 2017).

To ensure the credibility of the findings, data triangulation was applied by comparing and cross-validating data obtained from interviews, classroom observations, and document analysis. Triangulation strengthens qualitative research by reducing potential bias and increasing the validity of interpretations derived from multiple sources (Carter, 2014).

Ethical considerations were strictly observed throughout the research process. Informed consent was obtained from all participants prior to data collection, and participants were informed of their right to withdraw from the study at any time. Confidentiality and anonymity were maintained by using pseudonyms and removing identifying information from the data. Ethical principles in qualitative research were upheld to protect participants' rights and ensure responsible research conduct (Orb et al., 2001). Although the small sample size and localized research setting may limit the generalizability of the findings, the rich qualitative data generated provide valuable insights into the integration of AI-based tools in elementary English language education.

RESULT AND DISCUSSION

Results

This section presents the findings derived from semi-structured interviews, classroom observations, and document analysis. The results are organized thematically to provide a clear and systematic overview of elementary school English teachers' perceptions, experiences, and challenges in using Artificial Intelligence (AI)-based tools in English language teaching.

Use of AI-Based Tools in Elementary English Language Teaching

The findings reveal that all participating teachers incorporated AI-based tools into their English language instruction, although the types and intensity of use varied. The most commonly used tools included ChatGPT, Google Translate, Canva, Quizizz, and Duolingo. ChatGPT was primarily utilized to support conversational practice, grammar explanation, and idea generation for classroom activities. Google Translate was frequently used to assist students in understanding vocabulary and basic sentence meanings, particularly for lower-proficiency learners. Canva was employed by teachers to design visually engaging instructional materials, while Quizizz and Duolingo were used to facilitate interactive and gamified learning activities.

Classroom observations confirmed that these tools were integrated into both teaching delivery and student practice. Teachers demonstrated flexibility in selecting AI tools based on lesson objectives and students' learning needs, indicating an emerging awareness of technology-supported pedagogy in elementary English education.

Table 1.
Summary of Teacher Perspectives on Artificial Intelligence Based Devices in English Language Teaching

Teacher ID	Experience (Years)	AI Tools Used	Perceived Benefits	Challenges Encountered
T1	5	ChatGPT, Google Translate, Canva	Increased engagement; improved fluency; effective material design	Limited technological access; time needed to master tools
T2	4	Duolingo, Canva, ChatGPT, Quizizz	Vocabulary retention; interactive learning; increased attention	Student over-reliance on AI; distraction risks

T3	4	Google Translate, ChatGPT, Canva	Pronunciation practice; grammar support; vocabulary expansion	Limited curriculum alignment; reduced accuracy for complex texts
T4	6	Canva, ChatGPT, Quizizz, Mind Mapping	Visual learning support; individualized learning	Overwhelming features; limited assessment formats
T5	8	Google Translate, ChatGPT, Canva	Collaborative material design; multilingual support	Internet dependency; curriculum mismatch
T6	12	Duolingo, Canva, ChatGPT, Quizizz	Engaging learning experience; lesson planning support	Accuracy concerns; premium feature limitations

Perceived Benefits of AI-Based Tools

Teachers reported several positive impacts of AI-based tools on their teaching practices and student learning. One of the most frequently mentioned benefits was increased student engagement. Interactive platforms such as Quizizz and Duolingo encouraged active participation and motivation through game-based features, while ChatGPT enabled more dynamic classroom interaction by providing immediate responses and feedback.

Another significant benefit was improved teaching efficiency. Teachers noted that tools such as Canva reduced the time required to prepare instructional materials, allowing them to create professional and visually appealing content more effectively. AI tools were also perceived to support individualized learning, as students were able to learn at their own pace and receive additional practice outside classroom hours. This was particularly beneficial in classrooms with diverse proficiency levels.

Challenges in Implementing AI-Based Tools

Despite these benefits, teachers also encountered several challenges when integrating AI tools into their classrooms. Limited access to technological infrastructure, including insufficient digital devices and unstable internet connectivity, was identified as a major barrier to consistent implementation. In addition, teachers reported a lack of formal training related to AI integration, which limited their ability to utilize advanced features effectively.

Another challenge involved students' over-reliance on AI tools, especially for translation and task completion. Teachers expressed concerns that excessive dependence on AI could reduce students' critical thinking skills and independent language production. Furthermore, teachers highlighted issues related to the accuracy of AI-generated content, particularly when dealing with complex texts. Ethical concerns, including data privacy and algorithmic bias, were also raised, indicating a need for clearer guidelines in AI use.

Influence of Teaching Experience

Teaching experience appeared to influence how effectively AI-based tools were integrated into English language teaching. More experienced teachers demonstrated greater confidence and flexibility in combining multiple AI tools to support instructional objectives and classroom management. They were more likely to adapt AI tools to suit students' proficiency levels and lesson goals rather than relying on the tools as standalone solutions. In contrast, less experienced teachers reported greater difficulty in managing and adapting AI tools within classroom contexts, particularly when technical issues or unexpected student responses emerged. This finding suggests that pedagogical experience plays a crucial role in determining how AI tools are meaningfully integrated into teaching practices, supporting previous studies that emphasize the importance of teacher expertise in technology-enhanced learning environments.

Discussion

This section interprets the findings by relating them to existing literature and discusses their implications, strengths, and limitations.

The findings of this study align with previous research indicating that AI-based tools can enhance student engagement and support language learning through interactive and personalized learning experiences. Previous studies have shown that AI-supported applications, such as chatbots and gamified platforms, promote learner motivation and active participation in English language learning (Hartono et al., 2023; Basheer C., 2025; Wang et al., 2024). Similarly, the present study demonstrates that AI tools provide flexible learning opportunities that address individual student needs, particularly in vocabulary development and grammar practice, which is consistent with findings reported by Mardhiyya et al. (2025) and Ozdemir et al. (2024).

However, the results also reveal that the impact of AI on conversational fluency remains limited at the elementary level. This finding contrasts with studies conducted in secondary and higher education contexts, which report more substantial effects of AI-based tools on spoken language development (Nguyen et al., 2025; Ozdemir et al., 2024). This difference may be explained by

the developmental characteristics of elementary school learners, who require intensive teacher guidance, scaffolding, and social interaction to develop communicative competence. In this context, AI tools function more effectively as supplementary instructional resources rather than as primary agents of language instruction, supporting the arguments of Zawacki-Richter et al. (2019) and Selwyn (2024).

The challenges identified in this study are consistent with previous research highlighting infrastructural and pedagogical barriers to AI integration in school settings. Limited technological access, unstable internet connectivity, and insufficient teacher training have been widely reported as significant obstacles to meaningful AI implementation in classrooms (OECD, 2019; Nava et al., 2025; Yusuf, 2025). These findings reinforce the view that successful AI integration depends not only on the availability of technology but also on teacher readiness, professional development, and institutional support (Velander et al., 2024).

A key strength of this study lies in its use of multiple data sources, including interviews, classroom observations, and document analysis, which enhanced the credibility of the findings through data triangulation (Carter, 2014; Nowell et al., 2017). Nevertheless, the study has several limitations. The small sample size and localized research setting limit the generalizability of the findings. In addition, the study focused on short-term classroom practices and did not examine the long-term effects of AI integration on students' English language development.

Overall, the findings suggest that while AI-based tools offer significant potential to support English language teaching at the elementary level, their effectiveness depends on balanced implementation, adequate teacher training, and alignment with curriculum objectives. AI should therefore be positioned as a complementary tool that enhances, rather than replaces, teacher-led instruction to ensure meaningful, ethical, and developmentally appropriate language learning experiences.

CONCLUSION

This study examined elementary school English teachers' perceptions of and challenges in integrating Artificial Intelligence (AI)-based tools into English language teaching. The findings indicate that teachers generally hold positive attitudes toward the use of AI tools, recognizing their potential to enhance student engagement, support individualized learning, and improve teaching efficiency. AI-based tools were perceived as helpful resources for lesson planning, material development, and interactive classroom activities. However,

the findings also reveal that the effective implementation of AI in elementary school contexts is constrained by several factors, including limited technological infrastructure, insufficient teacher training, students' over-reliance on AI tools, and ethical concerns related to data privacy and content accuracy.

These findings directly address the research problem by demonstrating that while AI-based tools offer meaningful pedagogical benefits, their impact is highly dependent on teachers' pedagogical competence, contextual readiness, and institutional support. AI should therefore be positioned as a complementary instructional resource rather than a replacement for teacher-led instruction, particularly in primary education contexts where young learners require guidance, scaffolding, and social interaction. To support effective and responsible AI integration, continuous professional development through workshops and training programs is essential to equip teachers with the necessary knowledge and skills to utilize AI tools in alignment with curriculum objectives. In addition, schools and policymakers should prioritize improving technological infrastructure, including stable internet access and adequate digital devices, to ensure equitable access to AI-based learning resources.

Furthermore, the use of AI in elementary English language teaching should be promoted in a balanced manner by integrating AI-assisted learning with traditional instructional approaches in order to foster both technological competence and critical thinking skills among students. Collaboration between educators and developers of AI-based educational tools is also recommended to ensure that AI features are pedagogically appropriate, curriculum-aligned, and suitable for young learners. Finally, future research is encouraged to investigate the long-term impacts of AI integration on students' English language development and to compare the effectiveness of AI-supported instruction with conventional teaching methods across diverse educational contexts. Collectively, these efforts are expected to maximize the potential benefits of AI while ensuring its ethical, meaningful, and sustainable use in elementary English language education.

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