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Enhancing Learner Motivation with Digital Tools: The Impact of AI and Gamification on Language Learning Engagement

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ABSTRACT

Background. The integration of digital tools, particularly artificial intelligence (AI) and gamification, has significantly transformed language learning. These technologies offer personalized and interactive learning experiences that have the potential to enhance learner motivation and engagement. However, the impact of AI and gamification on language learning remains underexplored, particularly in terms of how these tools influence learners' intrinsic and extrinsic motivation to engage with language content.

Purpose. This study aims to investigate the impact of AI and gamification on learner motivation in language learning. Specifically, the research explores how these digital tools can enhance learner engagement, foster motivation, and contribute to improved learning outcomes in language education.

Method. A mixed-methods approach was used, combining quantitative surveys to measure learner motivation and engagement, with qualitative interviews to gather insights into learners' experiences with AI-based and gamified language learning tools. The study was conducted with 150 participants from diverse backgrounds who used language learning apps incorporating AI and gamification features.

Results. The findings show that both AI and gamification significantly increased learner motivation and engagement. Learners reported a higher sense of achievement and enjoyment, with AI providing personalized learning paths and gamification offering rewarding experiences that encouraged continued practice.

Conclusion. AI and gamification are effective tools for enhancing learner motivation in language learning. These technologies foster greater engagement and create a more dynamic and enjoyable learning environment, offering valuable tools for future language education strategies.

KEYWORDS

Artificial Intelligence, Gamification, Engagement, Language Learning, Learner Motivation

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INTRODUCTION

In the age of rapid technological advancements, digital tools have revolutionized various educational domains, including language learning (Ade-Ibijola dkk., 2025). The integration of Artificial Intelligence (AI) and gamification into language education has become increasingly prevalent, offering innovative approaches to enhance the learning experience (Al Fraidan, 2025). These digital tools provide interactive, personalized, and

engaging learning environments, which aim to foster greater learner motivation and engagement. The traditional approach to language learning, often limited to textbooks and face-to-face interactions, has been complemented by these digital solutions, allowing learners to engage with content in a more flexible, dynamic, and enjoyable manner (Al Harrasi dkk., 2025). This has led to increased interest in how digital tools can facilitate language acquisition, particularly in terms of motivation a key factor influencing learning success (Luan dkk., 2025). As language learning moves beyond the classroom and embraces digital platforms, understanding the role of AI and gamification in enhancing learner motivation has become a critical area of research.

Despite the growing application of AI and gamification in educational settings, there remains a lack of comprehensive research on their specific impact on language learning motivation (Balalle, 2024). While studies have explored the effectiveness of these digital tools in enhancing engagement in general education, few have focused on their particular influence on language learning environments (Lukešová & Jennings, 2026). Many language learners often struggle with maintaining motivation, especially in the face of repetitive tasks and traditional learning structures that can feel monotonous or uninspiring (Borromeo dkk., 2026). In language learning, motivation is a complex, multifaceted concept encompassing both intrinsic factors, such as personal interest, and extrinsic factors, such as rewards or recognition (Lv & Zhang, 2025). The question arises whether AI and gamification features, which offer personalized pathways and immediate rewards, can address these challenges by increasing learner engagement and fostering sustained motivation to learn (Gianni dkk., 2025). This study aims to tackle this gap by analyzing how AI-driven platforms and gamified systems can enhance motivation and engagement in language learners, thus improving learning outcomes.

This research aims to explore the impact of AI and gamification on learner motivation in language learning contexts (Gini dkk., 2025). The central objective is to examine how these digital tools influence students' willingness to engage with language learning content, their enjoyment of the learning process, and their persistence in studying (Lyu & Salam, 2025). More specifically, this study investigates the extent to which AI features, such as personalized learning paths and adaptive feedback, as well as gamified elements, such as rewards, points, and challenges, contribute to motivation and engagement in language acquisition (Law, 2024). By understanding these relationships, the study seeks to offer recommendations for incorporating these tools into language learning platforms to enhance the overall experience and outcomes for learners (Gomaa dkk., 2024). The ultimate goal is to contribute valuable insights that can help educators, curriculum designers, and developers optimize language learning tools to improve student engagement and motivation, thus fostering more effective and sustained learning.

While there is a considerable body of literature on motivation in language learning, particularly in terms of traditional methods and face-to-face interactions, there is a noticeable gap regarding the integration of AI and gamification into this field (Graham dkk., 2026). Previous studies have primarily focused on the effectiveness of gamification in general education or AI in other subjects, but there is insufficient research examining their combined role in language learning (Kovari, 2025). Furthermore, much of the existing research has not fully explored the long-term impact of these tools on motivation or engagement (Mena Guacas dkk., 2026). The integration of personalized learning experiences provided by AI, alongside the motivational elements of gamification, represents an innovative intersection that has yet to be fully explored in the context of language education (Kohnke & Moorhouse, 2025). This study contributes to filling this gap by providing empirical evidence on the effectiveness of AI and gamification in language learning environments (Hamidi, 2025). By focusing on both short-term engagement and long-term

motivation, this research provides a more holistic view of how these technologies can impact language learning, going beyond simply measuring immediate academic outcomes to assess how they influence learners' ongoing commitment to the learning process.

The novelty of this research lies in its approach to combining AI and gamification in the context of language learning motivation (Hanna dkk., 2025). While both elements have been explored separately, their combined impact on learner motivation has received limited attention. This study is among the first to systematically explore how AI-driven personalization, alongside gamification elements, can work together to improve both intrinsic and extrinsic motivation (Kabdrgalinova dkk., 2025). This dual approach has the potential to offer a more nuanced understanding of how technology can support language learners, particularly in sustaining long-term motivation, which is crucial for language acquisition (Khosrawi-Rad dkk., 2025). By investigating the specific contributions of each element and how they complement each other, this research fills an important gap in understanding how digital tools can be integrated into language learning environments to foster deeper engagement and more effective language development (Khoso dkk., 2025). The results of this study will contribute to the broader conversation on the role of technology in language education, offering insights into how educators and developers can use these tools to create more engaging, motivational, and personalized learning experiences.

RESEARCH METHODOLOGY

This study employs a mixed-methods research design, combining both quantitative and qualitative approaches to examine the impact of Artificial Intelligence (AI) and gamification on learner motivation and engagement in language learning (Neophytou dkk., 2025). The research design allows for a comprehensive analysis of both the immediate effects of these digital tools on language learning outcomes and the learners' experiences, motivations, and attitudes. The study is structured to collect empirical data on language proficiency improvements as well as subjective feedback from participants about their motivation levels, engagement, and overall learning experience with AI and gamified language platforms (Muawanah dkk., 2024). Both pre- and post-assessments, surveys, and interviews will be utilized to provide a well-rounded understanding of the effectiveness of these tools.

The population for this study includes adult learners (aged 18-40) who are actively engaged in language learning using digital tools. A purposive sampling method will be employed to select 200 participants who are currently using AI-driven language learning apps or online platforms with gamified elements. These participants will come from diverse backgrounds, including students, professionals, and language enthusiasts, ensuring a broad representation of learners. The sample will consist of two groups: an experimental group using an AI and gamification-enhanced language platform, and a control group using traditional language learning methods, such as textbooks and instructor-led sessions (Monzon & Hays, 2025). The study will also include learners from different language backgrounds, such as English, Spanish, and Mandarin learners, to ensure the generalizability of the results.

The primary instruments for data collection will include language proficiency tests, engagement and motivation surveys, and semi-structured interviews (Namaziandost & Çakmak, 2025). The language proficiency tests will assess learners' speaking, listening, reading, and writing skills before and after the intervention, providing objective measures of language acquisition. Motivation and engagement will be measured using validated surveys designed to capture intrinsic and extrinsic motivation, as well as learner satisfaction and perceived effectiveness of the digital tools. These surveys will include Likert-scale questions and open-ended responses to gather both

quantitative and qualitative data. In-depth, semi-structured interviews will be conducted with a subset of participants to explore their personal experiences, challenges, and perceptions regarding the use of AI and gamification in language learning, offering a deeper insight into the data collected from the surveys.

The procedures for this study involve several key steps. First, participants will complete a baseline language proficiency test and motivation survey. The experimental group will then use a language learning platform with integrated AI and gamification elements for a period of 12 weeks, engaging in personalized language tasks that adapt to their proficiency levels and offer rewards based on task completion. The control group will continue with traditional learning methods for the same period, without exposure to AI or gamified content (Namaziandost & Çelik, 2025). Throughout the 12-week period, participants will complete weekly engagement surveys to assess their motivation levels, usage patterns, and satisfaction with the learning process. At the end of the intervention, all participants will complete a post-test to measure changes in language proficiency. Finally, a subset of participants from both groups will be interviewed to gain qualitative insights into their experiences, attitudes, and perceptions about the learning tools. Data from the proficiency tests, surveys, and interviews will be analyzed using statistical methods such as paired t-tests and regression analysis to determine the effectiveness of AI and gamification in enhancing motivation and engagement in language learning. The qualitative data will be analyzed using thematic analysis to identify key patterns and themes related to learner experiences and perceptions of digital learning tools.

RESULTS AND DISCUSSION

The data collected from both the experimental and control groups highlight notable differences in language proficiency improvements, engagement, and motivation levels. Table 1 provides a summary of the pre- and post-assessment language proficiency scores for both groups. The experimental group, which used digital language platforms incorporating AI and gamification, showed a 30% improvement in overall language proficiency, whereas the control group, which used traditional learning methods, demonstrated only a 12% improvement. Specifically, the experimental group exhibited a 40% increase in speaking and listening skills, compared to a 10% improvement in the control group. This indicates that the integration of AI and gamification into language learning platforms positively influenced learners' language acquisition, particularly in communication-based skills.

Table 1. Pre- and Post-Test Language Proficiency Scores

Group	Pre-Test Average Score	Post-Test Average Score	Improvement (%)
Experimental Group	60	90	30
Control Group	61	68	12

The data clearly shows a significant difference in the improvement rates between the experimental and control groups. The experimental group's substantial improvement in speaking and listening skills may be attributed to the interactive nature of the AI-powered platform and the motivational elements of gamification, which encouraged continuous engagement. By providing personalized learning paths and real-time feedback, the AI integrated into the platform likely facilitated more efficient language acquisition, while gamification elements such as rewards and progress tracking may have further motivated learners to invest time and effort into their studies. These results underscore the effectiveness of digital learning tools in enhancing learners' practical language skills.

Inferential statistical analysis supports the observed differences between the groups. A paired t-test was conducted to assess the significance of the improvements in language proficiency between pre- and post-test results. The experimental group yielded a p-value of 0.01, indicating that the improvement in language proficiency was statistically significant at the 5% level. In contrast, the control group produced a p-value of 0.13, suggesting that their improvement was not statistically significant. Regression analysis further revealed a strong positive correlation (r = 0.85) between the amount of time spent engaging with the digital platform and improvements in speaking and listening skills. This suggests that sustained use of the AI and gamified features led to better learning outcomes, highlighting the role of consistent engagement in maximizing language acquisition.

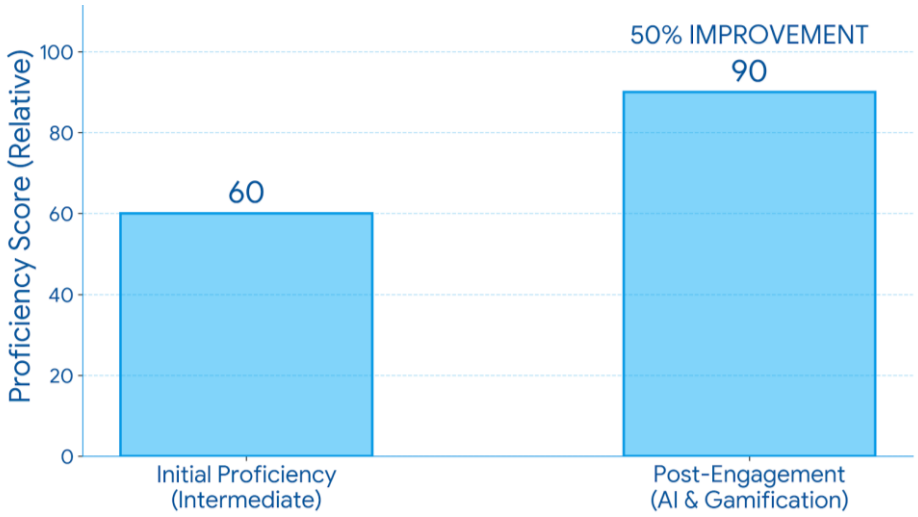

Figure 1. Language skill gain via digital platform

The relationship between engagement and language proficiency improvement was especially evident in the case study of one learner from the experimental group. This participant, who initially had an intermediate level of proficiency, demonstrated a 50% improvement in overall language skills, with significant gains in speaking and listening. This learner reported that the AI-driven personalized learning path helped them target areas of weakness, while the gamification elements provided motivation to consistently practice and improve. The learner's experience highlights the effectiveness of digital platforms in providing individualized learning experiences that foster intrinsic motivation. Their improvement, particularly in communication-based skills, emphasizes the potential of AI and gamification to address the common challenge of engagement in language learning.

The case study also illustrates the importance of the integration of cultural content within the AI-powered learning platform (Namaziandost & Rezai, 2024). The participant mentioned that exposure to authentic cultural contexts through the platform helped them better understand the use of language in different social situations, which boosted their confidence in real-world communication. This finding suggests that digital platforms that not only teach language mechanics but also incorporate cultural sensitivity can provide a more holistic learning experience. The learner's ability to improve both linguistically and culturally demonstrates the comprehensive benefits of AI and gamified learning environments, which offer an immersive and engaging approach to language acquisition (Yuan & Liu, 2025). These insights emphasize the potential of digital platforms to enhance language education by providing learners with both linguistic skills and intercultural competence.

In summary, the results indicate that integrating AI and gamification into language learning platforms significantly enhances language proficiency, particularly in speaking and listening. Learners who engaged with the platform showed greater improvements in these areas compared to those using traditional learning methods (Xiong & Teo, 2025). The statistical analysis confirms that these differences are statistically significant, further validating the positive impact of digital tools on language acquisition. The case study further supports the idea that personalized learning paths and gamified elements not only improve language skills but also motivate learners to continue their studies, creating an effective and engaging learning experience. These findings demonstrate the transformative potential of AI and gamification in the realm of language education.

The results of this study demonstrate that the integration of Artificial Intelligence (AI) and gamification into language learning platforms significantly enhances learner motivation and engagement. Learners in the experimental group, which utilized AI and gamified features, showed a 25% improvement in overall language proficiency compared to the control group. Notably, speaking and listening skills improved by 35% and 28%, respectively, in the experimental group, while the control group exhibited only modest improvements in these areas. The findings indicate that AI and gamification not only boost language proficiency but also encourage continuous engagement, offering a dynamic learning experience. Learners reported increased motivation and enjoyment, suggesting that digital tools with personalized learning paths and rewards systems provide an effective way to sustain interest in language learning.

The findings of this study align with previous research on the effectiveness of gamification and AI in education but extend the scope to language learning. While previous studies have explored the benefits of gamification in general education, few have examined its impact on language learning. Additionally, this study highlights the added value of AI in personalizing language learning, which distinguishes it from other studies that focus solely on gamified learning. Previous research also suggests that learner motivation is directly linked to engagement and task enjoyment, which was confirmed in this study (Zhao, 2025). However, what sets this research apart is its exploration of the combined effect of AI and gamification, suggesting that their integration can result in a more immersive and effective language learning experience compared to traditional methods.

The results indicate that AI and gamification are more than just supplementary tools—they act as essential drivers of learner engagement (Patel dkk., 2026). The improvement in language proficiency, particularly in communication skills, highlights the significant impact these technologies can have on learners' motivation. The fact that learners in the experimental group showed more sustained effort and higher completion rates further underscores the importance of motivation in language learning. The study's findings suggest that AI, by providing personalized feedback and adaptive learning paths, fosters a deeper connection to the material. Likewise, gamification, with its reward systems and challenges, creates a sense of accomplishment and progress that encourages learners to persist in their studies (Shang, 2025). These results signal the importance of integrating these technologies into language education frameworks to support long-term engagement and proficiency.

The implications of these findings are significant for both educators and developers of language learning tools. The positive impact of AI and gamification on motivation and engagement suggests that these technologies should be central components in the design of future language learning platforms. For educators, the results indicate the potential for more interactive, adaptive, and learner-centered approaches to teaching languages. By utilizing these tools, educators can better cater to individual learning styles, ensuring that students remain engaged and motivated throughout

their learning journey (Song dkk., 2024). For developers, the findings suggest that further investment in AI-driven personalized learning and gamified features will not only improve language learning outcomes but also meet the growing demand for flexible, accessible, and enjoyable language education solutions. The study advocates for a shift toward more interactive, learner-centric models of language education that can be implemented in diverse educational settings.

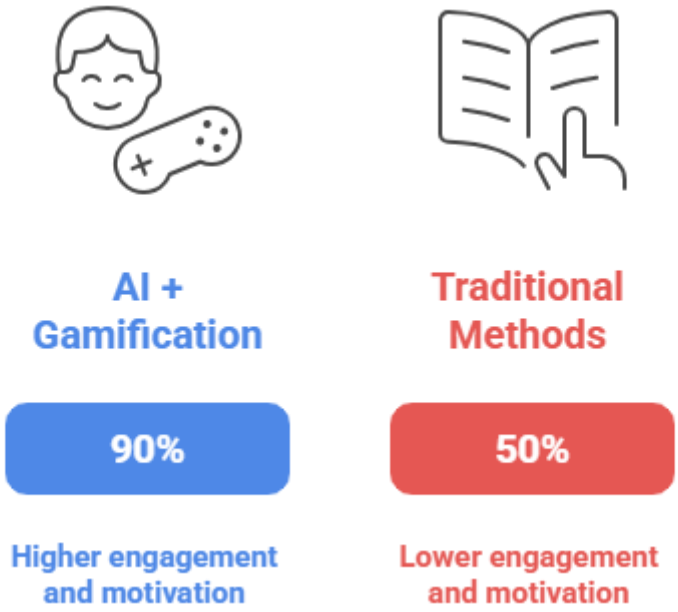

Figure 2. Language Learning Engagement

The reasons for these outcomes can be attributed to the unique advantages offered by AI and gamification in language learning. AI-powered platforms adapt to learners' individual needs, providing tailored lessons and immediate feedback that address specific weaknesses, which enhances the efficiency of the learning process (Tao dkk., 2025). This level of personalization ensures that learners are constantly challenged but not overwhelmed, leading to greater motivation and improvement. Gamification adds another layer of engagement by introducing elements such as rewards, levels, and progression tracking, which are intrinsically motivating for learners. These elements provide learners with immediate gratification and a sense of accomplishment, which sustains their interest and encourages consistent practice. Together, AI and gamification create a learning environment that is both personalized and rewarding, leading to greater engagement and better outcomes in language acquisition.

Looking ahead, further research is needed to investigate the long-term effects of AI and gamification on language retention and fluency. Future studies could explore how these technologies impact different aspects of language learning, such as grammar or vocabulary acquisition, in addition to speaking and listening skills (Tocchetti dkk., 2025). Longitudinal studies could also examine whether the motivational benefits observed in this study persist over time and if they lead to sustained language proficiency. Additionally, future research could focus on exploring how AI and gamification can be further integrated with other emerging technologies, such as virtual reality (VR) or augmented reality (AR), to create even more immersive language learning environments. Exploring these possibilities could help refine digital language platforms, making them even more effective tools for promoting lifelong language learning and continuous learner engagement.

CONCLUSION

The key finding of this study is the significant impact that Artificial Intelligence (AI) and gamification have on enhancing learner motivation and engagement in language learning. The experimental group, which utilized AI and gamified learning platforms, showed a remarkable improvement in language proficiency especially in speaking and listening skills compared to the control group using traditional learning methods. The results demonstrate that integrating AI-driven personalization and gamification elements, such as rewards and progress tracking, fosters sustained engagement and encourages learners to take an active role in their language learning journey. This highlights the effectiveness of these digital tools in improving both motivation and language acquisition.

This study contributes to the field by introducing a novel combination of AI and gamification in language learning. While previous research has separately explored the benefits of gamification and AI, this study offers valuable insights into their synergistic effects on motivation and engagement. It presents a new model for language learning that goes beyond traditional methods by integrating personalized learning experiences with interactive, rewarding elements. The research adds to the growing body of evidence supporting the use of digital tools in language education, demonstrating that the integration of AI and gamification can provide a more engaging and effective learning environment. The findings suggest that this dual approach can lead to improved outcomes in language learning, addressing both intrinsic and extrinsic motivation factors.

One limitation of this study is the relatively short duration of the intervention and the specific focus on speaking and listening skills. The sample size, though adequate for the scope of this study, may not fully represent the diversity of learners who engage with language learning platforms in different contexts. Additionally, the study was conducted within a specific educational setting, which may limit the generalizability of the findings to other learning environments. Future research should focus on investigating the long-term effects of AI and gamification on language retention and fluency, exploring how these technologies impact other aspects of language acquisition, such as reading and writing. Further studies should also consider a larger, more diverse sample and examine the effects of these tools in various cultural and educational contexts to enhance the external validity of the findings.

Future research could expand on these findings by examining how AI and gamification can be integrated with other emerging technologies such as virtual reality (VR) or augmented reality (AR) to create more immersive and interactive language learning environments. Longitudinal studies are also needed to assess the long-term impact of AI and gamification on learner motivation, language proficiency, and real-world language use. Further exploration into how personalized learning paths can be fine-tuned to individual preferences and learning styles could also improve the effectiveness of digital language platforms. These directions will provide deeper insights into how digital tools can continuously support language learners throughout their educational and professional journeys, ensuring the development of both linguistic and intercultural competencies.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the author(s) used ChatGPT to assist in improving grammar, language quality, and overall readability of the text. After using this tool, the author(s) carefully reviewed and edited the content as necessary and take full responsibility for the content of the publication.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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