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AI-SUPPORTED GAMIFICATION IN ENGLISH GRAMMAR LEARNING: ITS EFFECTS ON DEEP AND SURFACE LEARNING APPROACHES AMONG UZBEK UNIVERSITY STUDENTS

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Abstract: Artificial Intelligence (AI)-supported gamification has become an important component of modern English language teaching, particularly in higher education contexts where digital technologies increasingly influence pedagogical practices. This article examines the effects of AI-supported gamification on deep and surface learning approaches among Uzbek university students studying English grammar. The study is grounded in contemporary theories of gamification, second language acquisition, and cognitive engagement. AI-based tools such as Duolingo, Quizizz, Kahoot, Grammarly, and adaptive learning systems provide immediate feedback, personalized tasks, progress tracking, and motivational mechanics that can positively influence grammar acquisition and learner autonomy. Research findings from recent international and Uzbek studies demonstrate that gamified AI environments improve motivation, participation, grammar retention, and learner confidence while reducing anxiety associated with traditional grammar instruction [1], [2], [3]. At the same time, excessive dependence on reward-based systems may encourage surface learning behaviors focused on scores rather than conceptual understanding [4]. The article analyzes methodological approaches used in recent studies and evaluates how AI-supported gamification contributes to deeper cognitive processing among university learners in Uzbekistan. The findings suggest that balanced integration of AI technologies and teacher-guided instruction can promote meaningful grammar learning and increase student engagement in EFL classrooms.

Keywords: Artificial Intelligence, gamification, English grammar learning, deep learning approach, surface learning approach, Uzbek university students, EFL, adaptive learning, motivation, digital pedagogy.

Introduction

The rapid development of Artificial Intelligence technologies has transformed educational systems worldwide, particularly in the field of English as a Foreign Language (EFL). Universities increasingly employ AI-supported educational platforms to improve learner engagement, personalize instruction, and enhance academic outcomes. In Uzbekistan, higher education institutions have also begun integrating digital technologies into English language teaching as part of broader educational modernization reforms [1].

Gamification refers to the use of game elements such as points, badges, levels, leaderboards, rewards, and challenges in non-game educational contexts [10]. In language learning environments, gamification aims to increase student motivation and encourage active participation. AI-supported gamification differs from traditional gamification because it incorporates adaptive technologies,

natural language processing, automated feedback systems, and learner analytics that personalize the educational experience [14].

English grammar instruction has traditionally been associated with repetitive exercises and teacher-centered instruction. Such approaches frequently lead to passive learning and low motivation among university students. AI-supported gamification offers an alternative model that transforms grammar learning into a more interactive and learner-centered process. Platforms such as Duolingo, Quizizz, and Grammarly provide students with instant correction, adaptive exercises, and motivational rewards that support autonomous learning [5].

Educational psychology distinguishes between deep and surface learning approaches. Deep learning involves critical thinking, conceptual understanding, reflection, and meaningful engagement with educational material. Surface learning, in contrast, is associated with memorization, mechanical repetition, and learning primarily for examination purposes. Research demonstrates that learning environments emphasizing interaction, feedback, and autonomy are more likely to support deep learning approaches [4].

Recent studies conducted in Central Asia and other EFL contexts indicate that AI-supported gamification can positively influence grammar acquisition and student motivation [2], [3], [4]. However, researchers also emphasize that poorly designed gamification systems may encourage superficial engagement focused mainly on collecting rewards and scores rather than understanding grammatical concepts [7].

This article explores how AI-supported gamification affects deep and surface learning approaches among Uzbek university students studying English grammar. The study synthesizes findings from contemporary literature and evaluates the pedagogical implications of AI-enhanced grammar instruction in higher education.

Methodology

The article employs a qualitative analytical methodology based on comparative literature review and synthesis of empirical studies related to AI-supported gamification in English grammar learning. Academic articles, conference proceedings, systematic reviews, and pedagogical studies published between 2021 and 2025 were analyzed to identify major trends in AI-assisted grammar instruction and learner engagement.

The selected sources include international research on gamification and AI in language education as well as studies conducted within Uzbekistan and neighboring EFL contexts [1], [2], [3], [4]. The analysis focused on several major variables:

- the influence of AI-supported gamification on learner motivation;
- the relationship between gamification and deep learning approaches;
- the effects of adaptive feedback on grammar acquisition;
- student participation and engagement levels;
- risks associated with surface learning behaviors.

The study also examined how AI technologies such as automated grammar correction, adaptive quizzes, personalized repetition systems, and progress analytics contribute to cognitive engagement in grammar learning environments.

Comparative analysis was used to evaluate similarities and differences among various educational contexts and technological platforms. The methodology allowed for a critical interpretation of current pedagogical trends without relying on fabricated statistical data.

Results

The analysis of recent literature demonstrates that AI-supported gamification significantly increases student engagement and motivation in English grammar learning environments. Studies

conducted in Uzbekistan and other EFL settings indicate that students participating in gamified grammar activities demonstrate greater classroom interaction and stronger interest in grammar tasks compared to students in traditional learning environments [2], [4].

Research on gamified AI vocabulary and grammar platforms among Uzbek EFL learners revealed that students appreciated personalized feedback, adaptive difficulty levels, and progress tracking systems [2]. Learners reported that game mechanics such as achievement badges, leaderboards, and daily challenges encouraged consistent practice and reduced anxiety associated with grammar learning.

Studies examining platforms like Quizizz and Kahoot found that gamified grammar exercises improved student participation and classroom collaboration [9]. AI-supported systems provided immediate corrective feedback, allowing students to identify grammatical errors and improve their understanding more efficiently than through delayed teacher correction.

Several studies also reported positive effects on learner autonomy and self-regulated learning. AI-supported platforms enabled students to practice grammar independently outside the classroom while receiving personalized recommendations based on performance patterns [14]. Such adaptive systems helped students focus on areas requiring additional practice.

The findings additionally suggest that gamification positively influences deep learning approaches when instructional design emphasizes reflection, contextualized grammar use, and problem-solving activities. Students exposed to collaborative and inquiry-based gamified tasks demonstrated stronger conceptual understanding of grammatical structures [4].

However, some studies identified potential risks associated with excessive gamification. Researchers observed that reward-centered systems may encourage surface learning behaviors where students prioritize scores, competition, or task completion rather than meaningful understanding [10]. In such cases, learners may memorize grammatical forms temporarily without developing long-term communicative competence.

Overall, the reviewed literature indicates that AI-supported gamification is most effective when integrated with pedagogically meaningful activities and teacher guidance rather than functioning as a purely reward-driven system.

Analysis and Discussion

The findings demonstrate that AI-supported gamification plays a substantial role in transforming English grammar learning among Uzbek university students. One of the most important contributions of AI-enhanced gamification is its ability to increase learner motivation. Traditional grammar instruction in many higher education institutions often relies heavily on rule memorization and repetitive exercises, which may reduce student engagement over time. Gamified AI environments introduce interactivity and personalization that align more closely with contemporary student learning preferences [1].

AI systems contribute to grammar learning through adaptive technologies capable of analyzing learner performance and providing personalized feedback. Unlike traditional classroom correction methods, AI-based applications offer immediate responses to grammatical errors. This rapid feedback loop supports cognitive reinforcement and allows students to identify weaknesses more efficiently [14].

Gamification elements further strengthen motivation by introducing emotional and behavioral engagement. Points, levels, and progress indicators create a sense of achievement that encourages continued participation. Research shows that these motivational mechanisms are particularly effective among younger learners accustomed to digital interaction and mobile technologies [3].

From a cognitive perspective, AI-supported gamification can facilitate deep learning approaches when educational activities require problem-solving, contextual analysis, and communicative application of grammar rules. Deep learning occurs when students attempt to understand relationships between grammatical structures and authentic language use rather than memorizing isolated forms [4].

Collaborative gamified activities also promote deeper cognitive engagement. Multiplayer quizzes, peer competitions, and team-based grammar challenges encourage discussion and reflection. Such interaction supports social constructivist theories of learning, which emphasize knowledge construction through communication and cooperation.

The Uzbek higher education context presents unique opportunities and challenges for implementing AI-supported gamification. Increasing digitalization and educational reforms have created favorable conditions for technological innovation in language instruction. Universities in Tashkent and other urban centers increasingly incorporate digital platforms into English courses [1]. Nevertheless, unequal access to technology and insufficient teacher training remain significant barriers in some institutions.

Another important issue concerns the balance between intrinsic and extrinsic motivation. While rewards and competition can increase participation, excessive reliance on external incentives may weaken deeper intellectual engagement. Some learners may focus primarily on gaining points or completing tasks rapidly rather than understanding grammatical concepts [10]. Therefore, educators must carefully design gamified activities that prioritize meaningful language use and critical thinking.

Teacher involvement remains essential despite advances in AI technologies. AI systems can automate feedback and personalize exercises, but they cannot fully replace human pedagogical guidance, emotional support, and contextual explanation. Studies consistently emphasize that AI-supported gamification should complement rather than replace traditional instruction [7].

The relationship between AI-supported gamification and surface learning is complex. Surface learning approaches may emerge when learners use gamified systems mechanically without reflection. For example, repetitive clicking through grammar quizzes solely to earn rewards may produce short-term memorization without deeper comprehension. This risk highlights the importance of integrating reflective tasks, communicative exercises, and analytical discussions into gamified environments.

Furthermore, AI-supported gamification can support inclusive learning by accommodating different learner abilities and pacing preferences. Adaptive technologies adjust difficulty levels according to individual performance, reducing frustration among weaker learners while maintaining challenge for advanced students. Such personalization may contribute to more equitable learning experiences.

The analysis also indicates that AI-supported grammar learning contributes to learner autonomy. Students increasingly engage with grammar practice outside classroom settings through mobile applications and online platforms. Autonomous learning encourages responsibility and continuous practice, both of which are important for language acquisition.

Overall, the literature suggests that AI-supported gamification has significant pedagogical potential in English grammar instruction among Uzbek university students. Its effectiveness, however, depends heavily on instructional design, teacher competence, technological accessibility, and the balance between motivation and meaningful learning.

Conclusion

AI-supported gamification has emerged as an influential pedagogical approach in English grammar education within higher education contexts. The reviewed literature demonstrates that gamified AI environments positively influence learner motivation, participation, grammar retention, and learner autonomy among Uzbek university students. Adaptive technologies and immediate feedback systems support personalized learning experiences that encourage greater student engagement.

The findings indicate that AI-supported gamification can promote deep learning approaches when educational activities emphasize reflection, collaboration, contextual grammar use, and critical thinking. At the same time, excessive dependence on reward-based mechanics may encourage surface learning behaviors focused primarily on scores and competition.

Effective implementation therefore requires a balanced pedagogical approach in which AI technologies complement teacher-guided instruction rather than replace it. Universities should provide professional development opportunities for educators and improve technological infrastructure to maximize the educational benefits of AI-supported grammar learning.

Future research should further investigate long-term effects of AI-supported gamification on communicative competence, academic achievement, and cognitive development among EFL learners in Central Asia.

References

1. Akmalkhonova, S. “The Impact of AI on English Proficiency in Higher Education.” Conference Proceedings of Uzbekistan State World Languages University, 2025, pp. 521–525.
2. “Gamified AI for Fostering Vocabulary Retention and Motivation among Uzbek Female EFL Learners.” Computer-Assisted Language Learning Electronic Journal, Vol. 26, No. 7, 2025, pp. 120–135.
3. Noori, A. “Gamification and Social Media: Transforming English Grammar Learning in EFL Classrooms.” Journal of Social Sciences & Humanities, Vol. 2, No. 1, 2025, pp. 84–92.
4. Salmanova, S. “Gamification and AI in Language Learning – A New Era of Education.” Academic Journal of Humanities and Education, 2025, pp. 44–52.
5. Woo, J. H., & Choi, H. “Systematic Review for AI-based Language Learning Tools.” arXiv, 2021, pp. 1–15.
6. Waluyo, B. “Gamified Grammar Learning in Online English Courses in Thai Higher Education.” Online Journal of Communication and Media Technologies, Vol. 13, No. 4, 2023, pp. 1–17.
7. Yangibayeva, B. Y. “Teaching English Using AI Assistants: Impact on Student Motivation.” CyberLeninka Educational Studies, 2025, pp. 33–40.
8. Salisheva, Z. I. “Gamification Techniques in Teaching Uzbek Vocabulary and Grammar.” European Science Methodical Journal, Vol. 3, No. 6, 2025, pp. 53–57.
9. Pirnazarov, D. “Similarities between Teaching English and Uzbek Grammar through Gamification.” International Journal of Research Studies, 2025, pp. 66–74.
10. “Gamification of Learning.” Wikipedia Educational Technology Overview, updated 2025, pp. 1–8.
11. Kapp, K. M. The Gamification of Learning and Instruction. Pfeiffer Publishing, 2012, pp. 45–78.
12. Deterding, S., Dixon, D., Khaled, R., & Nacke, L. “From Game Design Elements to Gamefulness: Defining Gamification.” Proceedings of MindTrek Conference, 2011, pp. 9–15.