



ARTIFICIAL INTELLIGENCE–SUPPORTED PERSONALIZED GAME-BASED LEARNING ENVIRONMENTS: PSYCHOLOGICAL APPROACHES TO DEVELOPING LEARNER AUTONOMY IN FOREIGN LANGUAGE EDUCATION

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Abstract. The present study explores the psychological mechanisms underlying the formation of learner autonomy in foreign language education through the integration of personalized game-based scenarios supported by artificial intelligence (AI). Within the broader framework of digital transformation in higher education, the research focuses on how AI-driven personalization and gamification stimulate motivation, self-regulation, and engagement, thereby reinforcing the psychological foundations of independent learning. Particular attention is given to the mediating role of motivation and its interaction with self-regulatory processes, which together constitute the core psychological mechanisms of autonomy development. Empirical data were obtained through a quantitative survey of 112 students enrolled in the “Teacher Training in Two Foreign Languages” program at Tashenev University. The questionnaire included 25 items organized into five thematic clusters: goal setting and planning with digital and AI tools; self-regulation and organization of learning activities; use of digital technologies and AI; perceived impact of AI and gamification; and motivation and engagement. The analysis revealed positive student perceptions of AI and gamification, strong correlations between key dimensions of autonomous learning, and demonstrated that motivation partially mediates the relationship between AI use and self-regulation. These findings highlight the psychological mechanisms through which AI-supported gamification fosters autonomy, showing that emotional and motivational factors play a decisive role in shaping independent learning behaviors. The scientific significance of the study lies in substantiating the pedagogical and psychological potential of integrating AI and gamification into language education, while its practical relevance is reflected in the development of methodological recommendations for applying these

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tools to strengthen student autonomy. The results may be used in designing innovative educational programs, digital courses, and teaching strategies that align with the psychological foundations of learner autonomy in the context of higher education's digital transformation.

Keywords: gamification, artificial intelligence (AI), learner autonomy, self-regulation, foreign language education, motivation, psychological mechanisms

Introduction

Nowadays, schools are using more and more computers, tablets, and special programs to help students learn better. Instead of just listening to a teacher, students can use fun games and smart computers that change to fit what they need to learn. When learning a new language, like Spanish or French, using these smart tools and games makes studying more exciting and helps students stay motivated. As technology gets better all the time, it's also important for students to learn how to be responsible for their own learning. This means setting their own goals, planning what to study, checking how much they've learned, and taking charge of their progress.

The relevance of this research is determined by the urgent need to identify pedagogical strategies that not merely improve students' linguistic competence but also contribute to the cultivation of independence, critical thinking skills, and motivation for lifelong learning. In this regard, the implementation of AI-supported personalized game-based scenarios opens up new pedagogical opportunities (Alam et al., 2024). Such scenarios allow for the adaptation of instructional materials to individual learner profiles, maintain engagement through game mechanics (including points, levels, and rewards), and deliver personalized, real-time feedback that supports continuous progress.

Recent scholarship emphasizes the profound impact of artificial intelligence on the sphere of language education, particularly in the domains of assessment and instructional design. For instance, Alam et al. (2024) examined the role of the Intelligent Computer-Assisted Language Assessment (ICALA) system and its influence on teachers' professional attributes, such as immunity, reflective practice, job satisfaction, and persistence in second-language teaching. Their findings illustrate that AI technologies are reshaping the pedagogical landscape, influencing educators' resilience and overall professional well-being. Although this investigation primarily addresses teachers, it highlights a broader tendency, the transformation of language education under the influence of AI. Building upon this context, the present study reorients attention toward a student-centered application of AI, specifically analyzing the potential of AI-assisted personalized game scenarios to enhance learner autonomy, engagement, and efficiency in foreign language acquisition.

The role of AI in foreign language instruction has been extensively addressed in contemporary academic discourse. Scholars argue that AI technologies can function as virtual tutors, adjusting to learners' knowledge levels, preferred learning styles, and individual pace of progress (Cao & Phongsatha, 2025). Gamification, in parallel, is acknowledged as a powerful instrument for strengthening motivation, stimulating cognitive activity, and sustaining long-term interest in language learning (Elsayed et al., 2024). Nevertheless, the combined integration of AI-driven personalization and gamification strategies remains a relatively novel and insufficiently explored trajectory, particularly with respect to the advancement of learner autonomy (Duisenova & Zhorabekova, 2024).

AI is more than just a tool; it affects how students feel and stay motivated. When combined with good teaching and fun game-like activities, AI can help students become more independent, interested, and do better in school. Studies show that using AI in language learning can improve students' skills in reading, listening, writing, and speaking. It also keeps them focused and involved. (Pape & Steinbach, 2025). The implementation of intelligent learning and assessment systems has produced notable improvements in students' performance across all language skills, including reading, listening, writing, and speaking, while concurrently increasing both cognitive and behavioral engagement, according to recent research, which further supports the significant potential of integrating AI technologies into foreign language education (Spirina et al., 2025).

Many studies also point out that using AI to help students learn at their own pace is helpful in higher education. Creating AI-supported, personalized, game-based learning can be a good way to help learners become more autonomous. For example, tools like ChatGPT are changing how students learn languages by giving them more

personalized learning experiences and options (Zhakupova et al., 2022). It was determined that this highlights the potential of creating and executing AI-assisted customized game-based learning scenarios as one of the best tools for fostering learner autonomy. The development of sophisticated next-generation AI tools is a notable illustration of such tailored technology in language instruction. The advent of tools like ChatGPT has significantly changed how foreign language learning is approached, opening up new possibilities for customized instruction and broadening the range of learning techniques available to students.

However, Lo, Yu, Xu, and colleagues (Zhumabekova et al., 2025) observe that while ChatGPT can encourage students, offer personalized learning, and support teaching, it also has risks. These include incorrect information, privacy problems, and academic honesty issues, which need more study. Also, a study of 70 research papers found that most focused on writing skills, and it is important to study how ChatGPT affects reading, listening, and speaking (Lo et al., 2024).

These points suggest that there is a need for new ways to teach, like using AI-assisted personalized game-based learning to help students become more independent (Zhumatayeva et al., 2025). Therefore, this study looks at how AI-supported personalized game-based activities can help students learn languages on their own. The goal is to see how autonomous learning is, how engaged students are, and how they feel about using games and AI in learning. Also, it is important to see how these methods affect independent learning and how well students learn overall.

The scientific significance of the study shows how AI and game-based learning can improve language education and give ideas on how to use them to help students learn independently. The results can be used to design better educational programs, create online courses, and improve language teaching methods as higher education changes with new technology.

Materials and methods

This research studies students' views on using AI-supported personalized game-based activities in language learning, and how these activities affect their independence, motivation, and focus. The study uses a survey with questions that ask students to rate their agreement on a scale.

The survey happened at Tashenev University (in Shymkent, Kazakhstan) with students in the Teacher Training in Two Foreign Languages program. The data was collected online with Google Forms. 112 students took part, but some did not answer all the questions. To make sure the data was correct, only the surveys with all questions answered were used.

All answers were kept private and used only for this study, being respectful of the students who participated.

The participants were from different year groups. Most were second-year students (47.4%), then first-year students (20.1%), third-year students (22.5%), and fourth-year students (10%). The answers from these students can show how digital and AI tools can help them learn to be independent in their early years of study.

The survey had 25 statements that were grouped together to reflect key parts of autonomous learning when using AI and games. Students answered using a five-point scale:

- 1 – *Strongly disagree*
- 2 – *Disagree*
- 3 – *Neutral*
- 4 – *Agree*
- 5 – *Strongly agree*

The survey had five sections:

Section I: Goal Setting and Planning with Digital and AI Tools – This part asked about how well students can set goals and plan their studies using digital and AI tools. Example statement: *"I use digital resources and AI recommendations to set my language learning goals."*

Section II: Self-Regulation and Self-Organization in AI-Gamified Learning – This part looked at how well students can manage themselves and organize their learning in AI-supported game-like environments. Example statement: *"I continue learning even when tasks are suggested by AI without teacher involvement."*

Section III: Usage of Digital Tools and AI Resources – This section explored how often students use digital

platforms and AI applications to learn languages. Example statement: *“I actively use online platforms and AI applications to learn a language.”*

Section IV. Perceived Impact of AI and Gamification on Learning – assessed students’ views regarding the influence of AI and gamification on learning outcomes and effectiveness. Example statement: *“Gamified tasks with AI support help me understand the material better.”*

Section V. Motivation and Engagement in AI-Gamified Learning – evaluated the extent to which AI and gamified environments foster students’ motivation and engagement. Example statement: *“I feel satisfied when I complete AI-based tasks on my own.”*

The survey was conducted in September 2025. Students received the questionnaire link during scheduled classes and were invited to participate voluntarily and anonymously. To ensure accessibility and clarity, all items were presented in both English and Kazakh. On average, respondents required 10–15 minutes to complete the survey.

The reliability of the instrument was tested using Cronbach’s alpha, which demonstrated exceptionally high internal consistency across the 25-item scale ($\alpha = 0.957$, $N = 112$).

Data analysis was performed using IBM SPSS Statistics (Version 29) and involved several statistical procedures. Descriptive statistics (means and standard deviations) were calculated to identify general trends in students’ perceptions of AI-supported and gamified language learning. Pearson’s correlation analysis was applied to examine relationships among the five constructs, goal setting and planning, self-regulation, use of digital tools, perceived impact of AI and gamification, and motivation, revealing strong and statistically significant positive correlations ($p < .01$). To further investigate the underlying mechanism, mediation analysis was conducted using Hayes’ PROCESS macro (Model 4, 5,000 bootstrap samples), with Motivation tested as a mediator between the Impact of AI and Gamification and Self-Regulation. The results confirmed a significant partial mediation effect ($ab = 0.3626$, 95% CI [0.2372, 0.5180]).

Results

Table 1 provides a summary of descriptive statistics for the 25 survey items assessing students’ perceptions of employing digital and AI-based tools within gamified language learning environments. The average scores ranged between 3.88 and 4.35, reflecting predominantly positive attitudes toward the integration of AI and gamification in the learning process. The highest mean value ($M = 4.35$) was recorded for the item *“I find language learning more appealing when it is presented in a gamified format”*, indicating that game-based approaches substantially enhance learner engagement.

On the other hand, topics related to self-regulation and independent study time management, including *“I can organize my study schedule according to recommendations offered by digital platforms,”* showed significantly lower mean scores (around 3.88–3.92). This implies that even if students recognize the value of AI technologies, they can still have some trouble controlling their own study habits. Participants’ replies showed a modest degree of diversity, with dispersion values ranging from 0.83 to 1.15. When considered collectively, the results show that learners generally view gamified and AI-supported environments as efficient, inspiring, and supportive of the growth of autonomy in foreign language instruction.

Table 1.

Summary of Descriptive Statistics for Survey Items ($N = 112$)

Item	Mean	Standard deviation
1. I rely on digital resources and AI-generated recommendations to define my language learning objectives.	4.12	0.98
2. AI technologies assist me in identifying which language skills should be prioritized in my learning.	4.10	1.02

3. I am able to structure my learning process based on suggestions and feedback provided by AI.	4.05	1.09
4. Gamified platforms support me in articulating my learning tasks more clearly.	3.92	1.08
5. The use of digital tools and AI enhances the effectiveness of my learning plans.	4.25	1.00
6. I continue studying even when tasks are proposed by AI without direct teacher involvement.	3.88	1.15
7. I can organize my study schedule according to recommendations offered by digital platforms.	3.90	1.07
8. Feedback generated by AI helps me evaluate my errors and improve my performance.	4.28	0.94
9. I monitor my progress using analytics and reports produced by AI systems.	4.12	1.05
10. I take responsibility for my learning outcomes even when tasks are assigned by AI.	4.18	1.01
11. I regularly engage with online platforms and AI applications to support my language learning.	4.15	1.06
12. I independently search for digital resources (applications, chatbots, websites) to facilitate my learning.	4.30	0.95
13. I employ AI tools to assess my knowledge and track my progress.	4.24	0.89
14. I am able to select digital tools that best align with my learning objectives.	4.20	0.92
15. AI technologies make the process of language learning more efficient and convenient.	4.28	0.96
16. Gamified tasks supported by AI help me comprehend learning material more effectively.	4.18	0.98
17. Personalized tasks stimulate me to study with greater activity and persistence.	4.22	0.95
18. AI provides timely and useful feedback during gamified learning activities.	4.26	0.97
19. Game mechanics (points, levels, rewards) make the learning process more engaging and enjoyable.	4.34	0.89
20. AI-adapted scenarios contribute to the development of my independent learning skills.	4.25	0.93
21. I experience satisfaction when I successfully complete AI-based tasks on my own.	4.12	0.97
22. I find language learning more appealing when it is presented in a gamified format.	4.35	0.91
23. I practice more frequently when tasks are adapted to my level by AI.	4.20	0.95
24. I believe that AI and gamification assist me in achieving my personal learning objectives.	4.15	0.93

25. I am motivated to continue studying languages through AI platforms and gamified tasks.	4.29	0.83
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To examine how the main parts of the AI-supported gamified learning system are linked, a correlation analysis was done. The intention was to see how the five studied ideas related to each other.

The results (Table 2) showed positive links between all pairs of things being tested ($N = 112$, $p < .01$), with values from $r = .668$ to $r = .825$. The strongest link was between “Perceived Impact of AI and Gamification on Learning Outcomes” and “Motivation & Engagement in AI-Gamified Language Learning” ($r = .825$, $p < .001$). It appears that students who think AI and gamification work well tend to be more motivated and involved. Another clear link was seen between Self-Regulation & Organization in Gamified AI Learning and of Digital Platforms and AI Resources ($r = .785$, $p < .001$). This points to the idea that using AI tools often is tied to how well students can control and plan their own learning.

In short, the data supports that including AI and gamification makes a connected system of related mental processes, setting goals, self-control, tools, how things are seen, and drive. Together, these help students learn on their own in foreign language education.

Table 2.

Spearman Correlation Matrix for the Five Core Constructs ($N = 112$)

Variables	1	2	3	4	5
1. Goal Setting & Planning with AI-Supported Tools	1	.725**	.668**	.681**	.690**
2. Self-Regulation & Organization in Gamified AI Learning	.725**	1	.785**	.770**	.768**
3. Utilization of Digital Platforms and AI Resources	.668**	.785**	1	.760**	.762**
4. Perceived Impact of AI and Gamification on Learning Outcomes	.681**	.770**	.760**	1	.825**
5. Motivation & Engagement in AI-Gamified Language Learning	.690**	.768**	.762**	.825**	1

To understand how students’ views on AI-integrated gamification influence their self-regulation skills, a mediation analysis was performed using Hayes’ PROCESS macro. In this model, the Perceived Impact of AI and Gamification on Learning Outcomes was set as the predictor, Self-Regulation & Organization in Gamified AI Learning as the outcome, and Motivation & Engagement in AI-Gamified Language Learning as the mediator. To

ensure the reliability of the indirect effect, a bootstrap procedure was applied (5,000 resamples, 95% confidence interval).

The results showed that the students' views of AI and gamification strongly predicted their motivation ($B = 0.7852$, $SE = 0.0318$, $p < .001$), accounting for about 68% of the variance ($R^2 = 0.6821$). Also, motivation was a predictor of self-regulation ($B = 0.4825$, $SE = 0.0704$, $p < .001$), even when considering the direct predictor of AI perception. The direct predictor of AI perception on self-regulation remained ($B = 0.4397$, $SE = 0.0665$, $p < .001$), suggesting partial mediation. The overall relationship between AI perception and self-regulation, without the mediator, was also ($B = 0.8124$, $SE = 0.0410$, $p < .001$), with the model explaining 64.2% of the variance in self-regulation scores ($R^2 = 0.6420$).

The indirect pathway through motivation was ($ab = 0.3727$, $BootSE = 0.0698$, 95% CI [0.2514, 0.5142]), confirming the presence of a mediating pathway. The proportion of mediation showed that about 46% of the connection between AI perception and self-regulation was transmitted through motivation. These results suggested that motivation is a key psychological factor in which AI-backed gamification helps develop independent learning habits in foreign language education.

Discussion

The latest research has noticed the changing role of artificial intelligence (AI) in language education, especially in grading and instructional design. For example, Alam et al studied how an Intelligent Computer-Assisted Language Assessment system changed teachers' skills and professional traits, including teaching strength, reflective practice, job happiness, and determination in second-language teaching. Their results showed how AI technologies changed the teaching environment, affecting teachers' well-being and flexibility (Alam et al., 2024). Even though this view focused on teachers, it represents a larger trend of systemic change in language education caused by AI implementation. These changes impact curriculum growth, classroom techniques, and the ways students obtain and grow in language skills. The use of AI in language learning offers chances for personalizing education, responding to individual student needs, and providing real-time comments. Teachers can then change exercises to match student learning styles, leading to a more interesting and useful educational experience. AI systems can also measure student development and show where they need extra help, letting teachers provide customized help and assistance. The AI developments can also encourage self-regulated skills. By providing interactive exercises and personalized comments, AI tools involve individuals to actively participate in their learning, develop goals, and track their achievements. This independence helps language learning and also develops important abilities that are very useful in several educational and professional settings. As AI continues to assimilate into language education, more research is required to discover its complete potential and fix the problems with its moral implications. AI systems need to be developed and implemented in an ethical way, focusing on fairness, transparency, and responsibility to ensure that all students can effectively take part in the advantages of the technology.

Expanding on this idea, this research views learning from the student's perspective. It looks at how using AI to personalize games might make students more independent, driven, and good at learning a new language. Previous work shows AI can act like a practice teacher, changing things based on how well students do, how they learn, and how fast they go. Also, using games in teaching is known to get students interested, keep them thinking, and help them stay focused on learning for a longer time. But, using AI to make learning personal and adding games hasn't been studied much, especially in how it helps students learn on their own.

AI shouldn't just be seen as a tool to make things automatic. It actually affects how students feel about learning and what gets them going. When AI is used in teaching and in games, it can help students become more independent, get involved, and do better in school (Pape & Steinbach, 2025). Studies that combine many research results show that using smart learning and testing systems greatly improves how well students understand and use language. It also makes them more interested and involved in learning (Zhakupova et al., 2022). Plus, systems that change and personalize learning are seen as a top way to use AI in colleges (Zhumabekova et al., 2025).

The arrival of new AI tools, like ChatGPT, has changed language learning a lot. It gives chances to make learning very personal (Zhumatayeva et al., 2024). As Lo, Yu, Xu, and others say, using ChatGPT in English as a Second or Foreign Language classes can boost desire, give more chances for students to learn on their own, and

give extra teaching help (Lo et al., 2024). They also warn about problems like wrong information, privacy issues, and cheating risks. This means we need to keep studying how to use AI in a moral and good way for teaching. These ideas show it's important to look at new ways of teaching, like using AI-powered games, to help students learn on their own (Spirina et al., 2025).

The study's analysis that looks at how things relate shows strong links between all five ideas: setting goals and plans, controlling oneself, using digital tools, feeling the impact of AI and games, and being driven ($r = .668-.825$, $p \leq .01$). The strongest link was between feeling the impact of AI/games and being driven ($r = .825$, $p \leq .001$). This proves that what gets students going is key to how they see new educational tools.

To better understand how these ideas connect, a study was done to see if one thing affects another, using a method by Hayes (Model 4; 5,000 samples were tested). The study tested if what gets students going changes the link between feeling the impact of AI and games and how students control themselves. The results showed this is partly true. Feeling the impact of AI greatly increases what gets students going ($B = 0.7852$, $p \leq .001$). And what gets students going greatly increases how they control themselves ($B = 0.4825$, $p \leq .001$). The direct influence of feeling AI on self-control was also strong ($B = 0.4397$, $p \leq .001$). The effect that goes through motivation was also important ($ab = 0.3727$, 95% CI [0.2514, 0.5142]). About 46% of the total influence was changed by motivation.

These results show that students who see AI-powered tools and games as good often feel more driven. This then betters their skill to control themselves and be independent. Because there's still a strong direct influence, it means other things, like setting learning goals, using planning ways, or using AI to track progress, can also help students learn on their own.

In real life, this means it's important to design digital learning spaces that really focus on making students want to learn. Giving feedback that changes, showing how they're doing, and giving rewards can make students more driven from the inside. This helps them control themselves and learn alone. So, motivation is a key thing that connects new tech with helping students learn on their own in language education.

It's good to note that this study looked at things at one point in time, which limits how we can say one thing causes another. So, the results should be seen as likely, and future tests over time or experiments should check them. Also, using answers students give themselves can bring in some bias. Even with these limits, the strength of the results, the amount they explain, and how they fit with theory confirm they are dependable.

In short, the results give proof that using AI and games together can help students learn on their own. The study adds to the growing research on AI-helped language learning by showing that tech gets students involved not merely by bettering self-control but also by working through what gets them going. This opens ways to design AI-improved personalized learning spots that push self-led and independent language learning as tech changes education.

Conclusion

This study investigated the psychological mechanisms underlying the formation of learner autonomy in foreign language education through the integration of personalized, AI-supported gamified scenarios. Situated within the broader context of digital transformation in higher education, the research confirmed that artificial intelligence and gamification are not solely technological innovations but also pedagogical instruments that directly influence motivation, self-regulation, and engagement, key psychological dimensions of autonomous learning.

The findings demonstrated that students generally hold positive attitudes toward AI-driven and gamified environments, perceiving them as effective, motivating, and conducive to independent learning. Correlation analysis revealed strong and statistically significant relationships among the five constructs, goal setting and planning, self-regulation, use of digital tools, perceived impact of AI and gamification, and motivation, underscoring the interconnected nature of autonomy development. Mediation analysis further substantiated that motivation partially mediates the relationship between perceived AI impact and self-regulation, confirming that AI-supported environments enhance autonomy both directly and indirectly through motivational pathways. This highlights motivation as a central psychological mechanism linking technological innovation with the cultivation of learner independence.

From a pedagogical perspective, the results emphasize the importance of designing digital learning environments that integrate adaptive feedback, personalized progress tracking, and gamified reward systems. Such features

strengthen intrinsic motivation and foster self-regulated learning behaviors, thereby equipping students with lifelong learning skills essential in the digital era. Moreover, the persistence of a significant direct effect of AI perception on self-regulation suggests that additional mechanisms, such as cognitive goal-setting, organizational strategies, and the active use of digital resources, also contribute to autonomy formation, warranting further exploration.

Despite its contributions, the study acknowledges certain limitations. The cross-sectional design restricts causal inference, and reliance on self-reported measures may introduce subjective bias. Future research should employ longitudinal and experimental designs to validate the mediation model and examine the long-term effects of AI-supported gamification on learner autonomy. Additionally, ethical considerations related to data privacy, misinformation, and academic integrity must be addressed to ensure responsible integration of AI into educational practice.

Taken together, this study provides empirical evidence that AI-supported gamified learning environments hold significant pedagogical potential for fostering learner autonomy in foreign language education. By bridging technological innovation with psychological mechanisms of motivation and self-regulation, AI-driven personalization and gamification can serve as powerful tools for advancing autonomous, self-directed learning in higher education. These insights contribute to the growing body of literature on AI-assisted pedagogy and open new avenues for the design of innovative, learner-centered educational models in the age of digital transformation.

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Conflicts of interest

No potential conflicts of interest are declared by the authors.

Authors' contributions

Each author made an equal contribution to the conceptualization of the research, study design, data analysis and interpretation, as well as manuscript preparation and revision. All authors collectively engaged in the identification and organization of scholarly literature, deliberation of findings, and articulation of conclusions. The final manuscript was critically reviewed and approved for publication by all authors.

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Жасанды интеллектке негізделген жекелендірілген ойындық оқу ортасы: шетел тілін үйренуде білім алушының оқу автономиясын дамытудағы психологиялық тәсілдер

Аңдатпа. Бұл зерттеу жасанды интеллектке (ЖИ) негізделген дербестендірілген ойындық сценарийлерді интеграциялау арқылы шет тілдерін оқытудағы оқу автономиясын қалыптастырудың психологиялық механизмдерін қарастырады. Жоғары білім берудегі цифрлық трансформацияның кең ауқымды контекстінде зерттеу ЖИ негізіндегі дербестендіру мен геймификацияның мотивацияны, өзін-өзі реттеуді және оқу процесіне қатысуды қалай ынталандыратынын, осылайша дербес оқудың психологиялық негіздерін нығайтатынын талдайды. Ерекше назар мотивацияның медиатор ретіндегі рөліне және оның өзін-өзі реттеу процестерімен өзара байланысына аударылады, олар автономияны дамытудағы негізгі психологиялық механизмдерді құрайды. Эмпирикалық деректер Ташенев университетіндегі «Екі шет тілінен мұғалімдерді даярлау» бағдарламасына қатысатын 112 студентке жүргізілген сандық сауалнама арқылы алынды. Сауалнама 25 тұжырымнан тұрды және бес тақырыптық кластерге бөлінді: цифрлық және ЖИ құралдары арқылы мақсат қою және жоспарлау; өзін-өзі реттеу және оқу іс-әрекетін ұйымдастыру; цифрлық технологиялар мен ЖИ қолдану; ЖИ мен геймификацияның әсерін қабылдау; мотивация және қатысу. Талдау студенттердің ЖИ мен геймификацияға оң көзқарасын көрсетті, автономды оқудың негізгі өлшемдері арасында күшті корреляциялар анықталды және мотивацияның ЖИ қолдану мен өзін-өзі реттеу арасындағы байланысты ішінара медиатор болатынын дәлелдеді. Бұл нәтижелер ЖИ қолдаған геймификацияның автономияны дамытуға ықпал ететін психологиялық механизмдерін айқындайды, эмоционалдық және мотивациялық факторлардың дербес оқу мінез-құлқын қалыптастыруда шешуші рөл атқаратынын көрсетеді. Зерттеудің ғылыми маңызы ЖИ мен геймификацияны тілдік білім беруге интеграциялаудың педагогикалық және психологиялық әлеуетін негіздеуде, ал практикалық маңызы студенттердің автономиясын нығайтуға арналған әдістемелік ұсыныстарды әзірлеуде көрініс табады. Нәтижелер инновациялық білім беру бағдарламаларын, цифрлық курстарды және оқыту стратегияларын жобалауда пайдаланылуы мүмкін, олар жоғары білім берудегі оқу автономиясының психологиялық негіздерімен үйлеседі.

Түйін сөздер: геймификация, жасанды интеллект (ЖИ), оқу автономиясы, өзін-өзі реттеу, шет тілін оқыту, мотивация, психологиялық механизмдер

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**Персонализированные игровые обучающие среды на основе искусственного интеллекта:
психологические подходы к развитию учебной автономии при изучении иностранного языка**

Аннотация. Настоящее исследование посвящено изучению психологических механизмов формирования учебной автономии в обучении иностранным языкам посредством интеграции персонализированных игровых сценариев, поддерживаемых искусственным интеллектом (ИИ). В рамках более широкого контекста цифровой трансформации высшего образования исследование акцентирует внимание на том, как персонализация, основанная на ИИ, и геймификация стимулируют мотивацию, саморегуляцию и вовлечённость, тем самым укрепляя психологические основы самостоятельного обучения. Особое внимание уделяется медирующей роли мотивации и её взаимодействию с процессами саморегуляции, которые вместе составляют ядро психологических механизмов развития автономии. Эмпирические данные были получены в ходе количественного опроса 112 студентов программы «Подготовка учителей по двум иностранным языкам» в Университете имени Ташенева. Анкета включала 25 утверждений, сгруппированных в пять тематических кластеров: постановка целей и планирование с использованием цифровых и ИИ-инструментов; саморегуляция и организация учебной деятельности; использование цифровых технологий и ИИ; восприятие влияния ИИ и геймификации; мотивация и вовлечённость. Анализ показал позитивное отношение студентов к ИИ и геймификации, выявил сильные корреляции между ключевыми измерениями автономного обучения и подтвердил, что мотивация частично опосредует связь между использованием ИИ и саморегуляцией. Полученные результаты демонстрируют психологические механизмы, посредством которых геймификация на основе ИИ способствует развитию автономии, показывая, что эмоциональные и мотивационные факторы играют решающую роль в формировании самостоятельного поведения учащихся. Научная значимость исследования заключается в обосновании педагогического и психологического потенциала интеграции ИИ и геймификации в языковое образование, а практическая ценность выражается в разработке методических рекомендаций по применению этих инструментов для укрепления автономии студентов. Результаты могут быть использованы при проектировании инновационных образовательных программ, цифровых курсов и стратегий преподавания, согласованных с психологическими основами учебной автономии в условиях цифровой трансформации высшего образования.

Ключевые слова: геймификация, искусственный интеллект (ИИ), учебная автономия, саморегуляция, обучение иностранным языкам, мотивация, психологические механизмы

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