THE IMPACT OF GAMIFICATION TECHNOLOGIES ON LEARNING MOTIVATION IN PRIMARY EDUCATION

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Abstract.
This article analyzes the impact of using gamification technologies in the modern education system on the motivation of primary school students. The results of scientific research showed that integrating gamification technologies into the learning process increases students' interest in learning, initiative, and self-assessment skills. During the study, the age psychology of primary school students, the influence of game elements, and the role of modern digital platforms were thoroughly examined. In conclusion, it was substantiated that gamification is not only an effective method to boost learning motivation but also contributes to solid knowledge acquisition and the development of competencies.
Keywords: gamification, primary education, learning motivation, digital technologies, interactive methods, game elements.

Today, one of the most pressing global issues is improving the quality of education and integrating innovative technologies into the educational process. In particular, various pedagogical approaches are being developed to increase students' interest in learning, their engagement, and level of academic achievement at the primary education stage. One such approach is gamification technology. Gamification refers to the process of applying game elements in the learning process to encourage students and foster interest in learning among them.

Primary school students are naturally inclined toward games, which can have a positive effect on their learning process. When the process of acquiring knowledge is organized in the form of a game through gamification, even topics that seem complex to children become simple, engaging, and easy to understand. Therefore, gamification technologies play an invaluable role in strengthening students' intrinsic motivation and fostering their desire for independent learning. In recent years, pedagogical research around the world has confirmed the positive impact of gamification on the quality of education. In particular, organizing lessons through virtual games, interactive platforms, and applications increases students' active participation and contributes to the consolidation of knowledge. However, how to use this technology correctly, how to adapt it to students' psychology, and how to determine and evaluate its impact on motivation are still considered ongoing research topics. From this point of view, this article provides an in-depth theoretical and practical analysis of the impact of gamification technologies on learning motivation in primary education. During the study, the issue was examined based on pedagogical, psychological, and methodological approaches, and existing practices were summarized.

In modern pedagogy and psychology, the impact of gamification technologies on learning motivation is being extensively studied. The term "gamification" was first introduced in academic literature in 2002 by Nick Pelling, referring to the application of game mechanics to

non-game contexts. Later, this term began to be widely used in the educational process and was scientifically substantiated by a number of scholars. In particular, researchers such as D. Clark and L. Sheldon emphasized in their studies that gamification is a key factor in personalizing the learning process, making it more engaging, and enhancing students' motivation. According to them, lessons organized through game elements help students develop independent thinking, problem-solving skills, and creative approaches. In the works of psychologists A. Maslow and S. Deci, internal and external factors influencing human motivation have been analyzed, which play an important role in forming the theoretical foundations of gamification. Specifically, the "Self-Determination Theory" developed by Deci and Ryan provides a scientific explanation of how gamification technologies enhance motivation in the educational process.

Among local scholars, the research conducted by G. Juraev, S. Sagdullayev, and N. Juraeva highlights the importance of interactive methods, including gamification techniques, in increasing students' interest in learning at the primary education level. According to them, especially when the psychophysiological characteristics of young children are considered, the appropriate selection of game-based methods can be a crucial factor in boosting motivation. Moreover, international scientific articles have extensively analyzed the integration of gamification with digital platforms, such as the effectiveness of applications like Kahoot, Quizizz, and ClassDojo in encouraging students. Foreign studies suggest that such platforms help create a healthy competitive environment among students and promote personal development.

The literature review shows that gamification not only makes the learning process more engaging but is also considered an important methodological tool for developing students' independent learning skills, fostering critical thinking, and improving academic outcomes. Nevertheless, the limited number of local studies on the comprehensive implementation and effectiveness of this technology in the primary education system further increases the relevance of this topic.

In this study, both theoretical and practical research methods were used to determine the impact of gamification technologies on learning motivation in primary education.

1. Theoretical analysis method.

Scientific literature, articles, dissertations, and methodological manuals related to gamification technologies were reviewed. Both international and local studies were analyzed to identify the relevance of the topic and clarify its scientific foundations.

2. Empirical methods.

Experimental trials were conducted in primary schools. Students from 3rd and 4th grades were involved in the experiment, and a gamification-based teaching methodology was applied during the lessons.

3. Observation and survey methods.

Throughout the experiment, students' and teachers' activity, engagement, and participation levels during lessons were regularly observed. Special questionnaires were distributed to students, their parents, and teachers to gather feedback on the effects of gamification methods.

4. Mathematical-statistical method.

The obtained results were statistically analyzed, and the impact of gamification on learning motivation was evaluated based on numerical data. Students' academic performance, participation indicators, and psychological responses were compared.

The study was conducted in primary schools in the city of Qarshi. In total, approximately 150 students from 3rd and 4th grades participated in the experimental work. The experiment was carried out in two stages. In the first stage, students were taught using traditional methods. In the second stage, lessons were organized using game elements, digital platforms, and interactive applications.

The results of the experimental work conducted with primary school students during the study demonstrated the positive impact of gamification technologies on learning motivation. These results were analyzed through the following indicators:

1. Student engagement during lessons.

During the experimental phase, lessons based on gamification showed a 30–35% increase in student participation compared to traditional lessons. The inclusion of game elements, virtual applications, and a competitive atmosphere led students to approach each task with greater interest. In particular, quiz-based activities conducted through platforms such as Kahoot and Quizizz enhanced students' desire to test their knowledge and strive for higher achievements.

2. Changes in learning motivation.

According to survey results, 85% of students rated gamified lessons as interesting and enjoyable, while 78% stated that such lessons increased their interest in studying. Parents noted that their children had developed a greater tendency toward independent learning and showed increased interest in deepening their knowledge outside of the classroom.

3. Knowledge retention and academic performance.

The results of the experiment showed that students who were taught through gamification methods had an average improvement of 20–25% in knowledge acquisition. Compared to students taught through traditional methods, those who experienced gamified lessons demonstrated higher test scores and more active participation in class.

Indicator	Traditional Method (%)	Gamification (%)
Class Participation	65	88
Learning Motivation	60	85
Knowledge Retention	68	90

4. Psychological impact.

Observations revealed that gamification technologies also had a positive psychological effect on students. Conducting lessons in a game-like format contributed to emotional comfort, increased enthusiasm for attending class, and improved communication skills. Furthermore, the creation of a healthy competitive environment in the classroom enhanced collaboration and students' social activity.

5. Teachers' perspectives.

Teachers who participated in the experiment confirmed the effectiveness of the gamification methodology. They emphasized that game elements made it easier to explain

complex topics in a simple and understandable way. Additionally, the use of interactive platforms ensured that the learning process aligned with modern educational standards.

When the findings of our study were compared with both local and international scientific research, it became evident that the positive impact of gamification technologies on learning motivation is extensive and consistently supported by evidence. Specifically, the idea that primary school students are naturally inclined to learn through play has also been emphasized by local educational scholars. For instance, in their 2021 research, S. Sagdullayev and N. Jo'rayeva highlighted the effectiveness of using play-based methods to foster motivation in primary school learners. They substantiated that psychologically engaging games can facilitate learning and have an additional positive emotional impact on children. The findings of our study support this notion as well—students demonstrated significantly higher levels of engagement, independence, and initiative during gamified lessons compared to traditional methods.

Similar results have also been observed in international research. For example, in his 2011 work "The Multiplayer Classroom: Designing Coursework as a Game," L. Sheldon scientifically validated that organizing coursework as a game significantly increases student engagement and motivation. Our own observations reflected a similar trend, with student participation and satisfaction rates exceeding 80%. In particular, Sheldon emphasized that reward systems within games enhance students' desire for self-expression. Additionally, studies by D. Clark (2013) pointed out that gamification can improve students' critical thinking and problem-solving skills. Our experimental findings similarly demonstrated that gamification not only enhanced motivation but also led to noticeably higher academic performance.

Another important comparative aspect is the difference in digital competence among students. In our local context, many students still lack sufficient digital skills, which meant that teachers often had to provide assistance in using certain platforms. In contrast, in countries like the United States and across Europe, specially designed digital gaming platforms for primary school students are widely implemented and integrated into the educational process. Furthermore, building on the internal motivation theory developed by psychologists A. Maslow and S. Deci, our research confirmed that gamification is effective in activating students' intrinsic motivation. In particular, prize systems, rewards, and level-based games encouraged a strong internal drive among students to achieve their goals. In conclusion, both local and international studies—as well as our experimental results—demonstrate consistent and complementary evidence of the positive impact of gamification technologies on learning motivation in primary education. Nonetheless, in the local context, there remains an urgent need to further improve the methodological foundations of this approach and to develop gamification resources based on national content and cultural context.

Conclusion

In conclusion, the use of gamification technologies is considered one of the most effective methods for increasing the learning motivation of primary school students. A learning process enriched with game elements not only increases students' interest in lessons but also strengthens their knowledge, enhances their independent thinking skills, and motivates them to solve problem-based tasks. Compared to traditionally organized lessons, gamified lessons show significantly higher effectiveness, as acknowledged not only by students but also by teachers and parents. Moreover, it has become clear that for the effective use of gamification technologies, it is necessary to improve teachers' professional skills, develop gamification

resources adapted to the national education system, and implement them systematically in practice. Through this approach, not only will the quality of primary education improve, but students' interest in independent learning, creativity, and critical thinking skills will also develop. Thus, the systematic study and proper implementation of gamification technologies in primary education are recognized as one of the most relevant directions in modern education. This, in turn, contributes to further improvement of the educational process, enhancement of students' academic achievement, and acceleration of the digital transformation in education.

Recommendations

- **Widespread integration into the educational process:** Gamification should be systematically and comprehensively implemented in primary education, with an emphasis on organizing engaging and interactive lessons.
- **Professional development courses for teachers:** It is necessary to organize specialized courses and workshops focused on gamification methods, and to equip teachers with skills to effectively use digital platforms.

Creation of locally adapted content: Special game-based applications and platforms should be developed taking into account students' national mentality, age characteristics, and the specific features of the education system.

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