

The Use of Gamification in Learning through Educational Platforms

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Abstract

Gamification is one of the most innovative directions in contemporary education, combining the principles of games with teaching and learning processes. By integrating playful elements—points, badges, levels, missions, and rewards—into educational activities, gamification stimulates student motivation, engagement, and performance. The purpose of this paper is to highlight the role of gamification in the educational process, based on the main motivational and pedagogical theories.

The analysis includes international examples—Kahoot!, Duolingo, Minecraft Education Edition, Classcraft—and Romanian initiatives such as Adservio and "Școala din Valiză" (School in a Suitcase), demonstrating the positive impact of gamification on academic performance and student motivation. The paper also highlights the challenges of integrating gamification into the Romanian education system and offers recommendations for a gradual and sustainable implementation. Through a balanced approach, gamification can become a strategic tool in modernizing education and creating an attractive, interactive learning environment tailored to the needs of 21st-century students.

Keywords: gamification, education, motivation, engagement, self-determination theory, interactive learning, educational technology.

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1. Introduction

The accelerated transformations of contemporary society, driven by digitization, globalization, and expanded access to information, require a profound rethinking of the educational process. In this context, gamification has become an innovative teaching and learning strategy, capable of combining the motivation specific to games with traditional educational objectives. The concept, introduced by Nick Pelling in 2002, was subsequently developed theoretically and applied practically in multiple fields, including education¹.

Gamification refers to the use of game elements—points, badges, levels, missions, rankings, or rewards—in a non-playful context, with the aim of increasing participant engagement and motivation². In the educational environment, it helps transform the learning process into a more engaging experience based on visible progress, constructive competition, and constant feedback.

Recent studies³ have shown that gamification stimulates students' intrinsic and extrinsic motivation, improving both academic performance and attitude towards learning. By applying the psychological principles of **self-determination theory**⁴ and the **"Flow" model**⁵, gamification creates an educational framework that promotes autonomy, competence, and emotional involvement. At the same time, gamification responds to the increasingly pressing need for personalised learning, allowing activities to be adapted to the pace, style and level of preparation of each student. Through digital platforms and interactive tools, the educational process becomes more dynamic and accessible, helping to reduce performance differences between students.

In Romania, interest in gamification is growing, although its implementation is still in its early stages. However, international experiences offer clear models that can be adapted to the local context, demonstrating that this method can represent a significant step towards modernizing the education system.

2. The theoretical framework of gamification in education

Gamification, as an emerging pedagogical method, has its roots in psychological theories of motivation and reward-based learning models. The conceptual foundation of gamification can be explained through three major perspectives: **self-determination theory, the flow model, and operant conditioning theory**.

¹ Sebastian Deterding, Dan Dixon, Rilla Khaled și Lennart Nacke, "From Game Design Elements to Gamefulness: Defining Gamification," în *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (2011), 9–15, <https://doi.org/10.1145/2181037.2181040>.

² Karl M. Kapp, *The Gamification of Learning and Instruction: Game-Based Methods and Strategies for Training and Education* (San Francisco, CA: Pfeiffer, 2012).

³ Juho Hamari, Jonna Koivisto și Harri Sarsa, "Does Gamification Work? A Literature Review of Empirical Studies on Gamification," în *Proceedings of the 47th Hawaii International Conference on System Sciences* (2014).

⁴ Edward L. Deci și Richard M. Ryan, *Intrinsic Motivation and Self-Determination in Human Behavior* (New York: Springer, 1985).

⁵ Mihaly Csikszentmihalyi, *Flow: The Psychology of Optimal Experience* (New York: Harper & Row, 1990).

- ***Self-determination theory***

This theory is one of the most influential paradigms for understanding human motivation. According to this theory, intrinsic motivation is stimulated when individuals feel autonomous, competent, and socially connected. Gamification manages to satisfy these three fundamental needs: it offers autonomy through the possibility of choosing activities and the pace of progress, it promotes competence through immediate feedback and recognition of performance, and the social component is supported through collaboration and positive competition⁶. In the educational environment, this theory explains why students are more actively involved when the learning process is structured as a game-like experience.

- ***The Flow Model***

The Flow Model describes a psychological state of maximum concentration and engagement in an activity. In an educational context, flow occurs when tasks are challenging enough to maintain interest, but not so difficult as to cause anxiety. Gamification mechanisms—gradual challenges, clear goals, constant feedback—facilitate the achievement of this state, transforming learning into an engaging and satisfying activity.

- ***Operant conditioning theory***

Skinner in 1953 demonstrated that behaviors can be shaped through rewards and positive reinforcement. In gamification, this principle is reflected in the use of points, badges, and levels, which reward progress and encourage desired behaviors. However, subsequent studies⁷ warn of the risk of overemphasizing extrinsic motivation, which can reduce intrinsic interest in learning. Therefore, the effectiveness of gamification depends on the balance between external rewards and internal motivation generated by the student's genuine interest.

Alongside these, another fundamental model that complements the understanding of gamification is that of Mechanics, Dynamics, and Aesthetics⁸-MDA⁹. Mechanics represent the structure of the game (rules, points, rankings), dynamics refer to the behaviors and motivations generated, and aesthetics refer to the emotional experience and user satisfaction. In education, these dimensions interact to create a framework in which learning becomes an enjoyable and meaningful experience.

Therefore, gamification is based on the intersection of psychology, pedagogy, and digital design. It does not aim to simply "gamify" education, but to optimize the learning process

⁶ Richard M. Ryan și Edward L. Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," *American Psychologist* 55, nr. 1 (2000): 68–78, <https://doi.org/10.1037/0003-066X.55.1.68>

⁷ Deci și Ryan, *Intrinsic Motivation and Self-Determination*.

⁸ Kevin Werbach și Dan Hunter, *For the Win: How Game Thinking Can Revolutionize Your Business* (Philadelphia: Wharton Digital Press, 2012).

⁹ María Ortiz-Rojas, Katherine Chiluiza, Martin Valcke și Carlos Bolaños-Mendoza, "How Gamification Boosts Learning in STEM Higher Education: A Mixed Methods Study," *International Journal of STEM Education* 12, nr. 1 (2025), <https://doi.org/10.1186/s40594-024-00521-3>

through engaging and meaningful experiences based on motivation, interaction, and balanced rewards.

3. Pedagogical implications of gamification in learning

Gamification, as an innovative teaching method, has become a topic of major interest in educational research over the last decade due to its potential to stimulate student motivation and engagement. However, the application of this method requires careful critical analysis, as its effectiveness depends on how it is integrated into the learning process and on teachers' ability to maintain a balance between playful elements and traditional pedagogical objectives.

A key aspect is the relationship between traditional methods and gamified activities. Although the introduction of playful mechanisms contributes to increased attention and participation, they should not completely replace traditional teaching. Success lies in striking a balance between the two approaches, so that play is used as a means of reinforcement, not as an end in itself. If the emphasis is placed excessively on external rewards, there is a risk of diminishing intrinsic motivation, which can lead to superficial involvement in the learning process¹⁰. From this perspective, the model proposed by Kapp (2012) argues that the value of gamification does not derive from the game itself, but from the way it generates a meaningful educational experience.

In the context of these transformations, the role of the teacher becomes complex and strategic. The teacher is no longer just a transmitter of information, but a designer of the learning experience, a facilitator who organizes activities, manages motivation, and creates collaborative learning contexts. Teachers must have solid digital skills, but also an understanding of the psycho-pedagogical processes involved in student motivation. In countries where gamification has been systematically implemented, such as Finland, teachers are trained to combine digital methods with student-centered pedagogy principles, achieving superior results in terms of school participation and satisfaction¹¹.

The inappropriate application of gamification, in the absence of methodological preparation, can generate a series of educational risks. First, overemphasizing external rewards can reduce genuine interest in knowledge, turning the learning process into a competition for points. Secondly, excessive competition between students can create frustration and anxiety, affecting the socio-emotional climate of the classroom. Thirdly, dependence on technology risks accentuating inequalities between students who have access to digital resources and those from disadvantaged backgrounds. Finally, a lack of teacher training can lead to superficial application of the method, with the loss of the formative dimension of the game. Therefore, a national educational strategy is needed to regulate the use of gamification and ensure equitable access to digital infrastructure.

From the perspective of self-determination theory, gamification provides a framework conducive to satisfying three fundamental psychological needs: autonomy, competence, and relatedness. Through progressive challenges, immediate feedback, and symbolic recognition,

¹⁰ Deci și Ryan, *Intrinsic Motivation and Self-Determination*.

¹¹ José A. Alonso-Sánchez, José L. Alonso și Elena Santana-Monagas, "Gamification in Higher Education: A Case Study in Educational Sciences," *TechTrends* 69 (2025): 507–518, <https://doi.org/10.1007/s11528-025-01056-2>

students develop a sense of control over their own learning and a more stable internal motivation¹². However, the positive effect of gamification varies depending on the age of the students, the type of tasks proposed, and the classroom climate. Younger children respond better to visual rewards and short missions, while teenagers prefer activities based on balanced competition and autonomy. In this sense, teachers need to personalize gamified activities, adapting them to age-specific characteristics and learning styles.

From a cognitive perspective, empirical studies show that gamification improves attention, working memory, and problem-solving skills. Constant feedback and the progressive structure of tasks reinforce active learning and critical thinking. Socially, collaborative activities on platforms such as Classcraft or Kahoot! develop communication skills, team spirit, and empathy. At the same time, by providing a positive learning experience, gamification contributes to the formation of a growth mindset, in which effort and perseverance are perceived as essential elements of educational success.

4. Methodology for implementing gamification in education

Applying gamification in education needs a solid approach that mixes theory with the real deal of teaching and learning¹³. The method involves a gradual integration that's planned and tailored to each subject, the age of the students, and the school's setup.

- ***The stages of integrating gamification into learning***

The effective implementation of gamification in the learning process can be structured into four main stages:

a) Analysis of educational objectives – the teacher identifies the desired skills and outcomes, selecting those objectives that can be improved through playful elements. Not all content lends itself to gamification, which is why the selection of topics is crucial.

b) Designing the gamified learning experience – at this stage, the appropriate game elements are chosen (points, badges, missions, levels, rankings). Each element must have a clear pedagogical function and contribute to the achievement of the curriculum objectives.

c) Implementation in the teaching process – activities are gradually integrated into the school routine so that students become familiar with the rules and reward system. It is recommended to alternate gamified activities with traditional ones to maintain a balance between competition and cooperation.

d) Monitoring and evaluating results – the teacher collects data on student progress, motivation, and satisfaction, constantly adjusting the structure of the game. Tools such as assessment rubrics and continuous feedback are essential at this stage.

¹² Ryan și Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation."

¹³ Neslihan Zeybek și Esra Saygı, "Gamification in Education: Why, Where, When, and How?—A Systematic Review," *Games and Culture: A Journal of Interactive Media* 19, nr. 2 (2024): 237–264, <https://doi.org/10.1177/15554120231158625>

- ***The role of the teacher in the gamification process***

The teacher becomes the designer of the educational experience, not just a transmitter of information. They have the task of transforming curricular objectives into attractive educational challenges capable of stimulating engagement and collaboration. In this sense, teachers must have solid digital skills and a good understanding of motivational principles.

Teacher training is a critical issue. Studies show that teachers who participate in training programs on the use of educational platforms (Kahoot!, Classcraft, Duolingo, Adservio) develop a greater willingness to integrate innovative methods¹⁴.

- ***Selecting digital tools in the gamification process***

Selecting digital tools is one of the most important steps in applying gamification, as the effectiveness of the method largely depends on the suitability of the platforms and applications to the educational objectives. The correct choice of tools must be based on a careful analysis of the following criteria:

- Accessibility (ease of use for students and teachers, availability in Romanian, compatibility with different devices);
- Pedagogical purpose (what type of skills it develops—cognitive, social, creative, digital, etc.);
- Level of interactivity and feedback (ability to provide immediate and personalized responses to students);
- Ability to monitor progress (through statistics, reports, and automatic assessments);
- Compatibility with existing educational systems (LMS platforms such as Google Classroom, Moodle, or Adservio). In addition to these established platforms, there is an emerging trend to integrate artificial intelligence (AI) and augmented reality (AR) into gamification. AI-based applications can provide personalized feedback and adapt the difficulty of exercises to each student's level. AR and VR technologies also create immersive learning experiences, transforming classrooms into virtual exploration spaces. Notable examples include the Quiver app (for augmented reality in visual education) and Nearpod VR, used for scientific simulations and virtual tours.

Therefore, the selection of digital tools must be made strategically, depending on the educational goal, available resources, and student profile. A balanced approach, combining traditional methods with modern interactive tools, can generate an effective, attractive, and sustainable learning process.

- ***Impact assessment***

The effectiveness of gamification is measured by analyzing data on student motivation, participation, and performance. The assessment may include questionnaires, interviews, or systematic observations. Empirical studies (Hamari, Koivisto & Sarsa, 2014) confirm that students who are constantly involved in gamified activities achieve better results and show a positive attitude towards learning.

¹⁴ Alf Inge Wang and Rabail Tahir, "The Effect of Using Kahoot! for Learning – A Literature Review," *Computers & Education* 149 (2020): Article 103818, <https://doi.org/10.1016/j.compedu.2020.103818>

5. Tools and platforms used internationally to gamify education

Over the past decade, gamification has become one of the most widely used innovative methods for modernizing the educational process globally. Successful implementations in various educational systems demonstrate the concept's adaptability and its potential to motivate students, consolidate knowledge, and facilitate experiential learning.

- **Kahoot! (Norway)**

Developed in 2013 at the Norwegian University of Science and Technology, the Kahoot! platform is used in over 200 countries, with over a billion users annually. It transforms formative assessment into an interactive, competitive, and engaging activity. In a study conducted by Wang and Tahir¹⁵, 87% of teachers surveyed reported a significant increase in student attention and participation when using Kahoot! for review or assessment. The platform also offers the possibility of integration with Google Classroom, facilitating content management and student progress analysis.

- **Duolingo (USA)**

The Duolingo app is a benchmark for the application of gamification in language learning. Launched in 2011, it combines progressive levels of difficulty, instant feedback, symbolic rewards (badges, XP points), and maintaining a "daily streak" that encourages consistency. According to the company, over 500 million active users use the platform monthly, making it a global educational laboratory. Research by Vesselinov and Grego¹⁶ shows that a complete Duolingo course is equivalent to over 30–40 hours of university study of a foreign language.

- **Classcraft (Canada)**

The Classcraft platform was designed to transform the school environment into a role-playing experience, in which students collaborate, accumulate experience points, and unlock symbolic rewards for positive behaviors. Studies conducted in Quebec¹⁷ showed a 45% reduction in disruptive behaviors and a 65% increase in classroom engagement. The model is based on cooperation and student empowerment, allowing teachers to combine traditional methods with playful dynamics.

- **Minecraft: Education Edition (USA, UK)**

The educational version of the famous Minecraft game provides a virtual space where students can build, explore, and collaborate to solve interdisciplinary tasks. According to Microsoft Education¹⁸, the platform is used in over 150 countries and is integrated into science, history, programming, and civics programs. In British schools, Minecraft has been used to simulate biological ecosystems, historical structures, and mathematical concepts. Its impact on

¹⁵ Wang and Tahir, "The Effect of Using Kahoot! for Learning."

¹⁶ Rossen Vesselinov și John Grego, *Duolingo Effectiveness Study* (New York: City University of New York, 2016).

¹⁷ Classcraft, *Impactul utilizării platformei Classcraft asupra comportamentelor disruptive și implicării elevilor în școală* [Studiu realizat în Québec] (Classcraft Inc., 2019).

¹⁸ Microsoft Education, *Minecraft: Education Edition Global Report* (2022).

student motivation is confirmed by studies showing an increase of over 30% in information retention compared to traditional methods.

- **Quizizz (India)**

The Quizizz platform offers an alternative to Kahoot!, allowing the creation of interactive tests, but with a focus on the individual pace of the student. Students receive immediate feedback, and teachers can analyze response statistics. In a study conducted by Sari and Setiawan¹⁹, the use of Quizizz significantly improved students' English language performance and increased motivation for active learning.

- **Smartick (Spain)**

The Smartick platform uses artificial intelligence to personalize math and logic exercises for children between the ages of 6 and 14. Each daily session lasts 15 minutes and dynamically adapts to the student's level. Its gamification model, based on positive feedback and symbolic rewards, has been recognized by the OECD as a best practice in adaptive learning²⁰.

- **Seesaw and ClassDojo (USA)**

These platforms provide teachers with tools to integrate gamification into daily activities. ClassDojo rewards positive behaviors with points and trophies, strengthening the teacher-student-parent relationship, while Seesaw provides students with an interactive digital portfolio where they can receive visual feedback.

6. Educational gamification initiatives in Romania

Although gamification is a relatively new concept in the Romanian education system, recent years have seen a number of remarkable initiatives and projects that demonstrate the potential of this method to transform the learning experience. These examples illustrate institutional and private efforts to integrate digital tools, symbolic rewards, and playful motivation into the educational process.

- **Adservio – digitizing educational management**

The Adservio platform, developed in Iași and used today in hundreds of schools in Romania, is one of the most advanced solutions for digitizing the educational process. Beyond its administrative functions (electronic catalog, timetable, school-parent communication), Adservio integrates gamification elements such as:

- scores and badges for academic performance,
- visual progress charts,
- personalized statistics for each student,
- constant feedback from teachers

¹⁹ A. Sari și B. Setiawan, "The Effectiveness of Quizizz in English Learning: A Classroom-Based Study," *Journal of Education Technology* 20, nr. 3 (2021): 101–110.

²⁰ OECD, *Smart Learning and Adaptive Education Systems* (Paris: OECD Publishing, 2021).

An internal report conducted by the company in 2023²¹ shows that in schools that use the platform daily, absenteeism has decreased by more than 25%, and students' interest in extracurricular activities has increased significantly. At the same time, parents reported more transparent communication and increased motivation among their children to perform well.

Adservio is also often used as a complementary platform in technical high schools and universities, where visual progress and reward features encourage participation in online learning activities, strengthening the link between education and technology.

- **The "School in a Suitcase" project – digital inclusion and motivation in rural areas**

Initiated by the Vodafone Romania Foundation and World Vision Romania, the "School in a Suitcase" project is one of the most representative gamification initiatives in Romanian education. Launched in 2018, the program aims to reduce the digital divide in rural areas by providing tablets, interactive resources, and training teachers in the use of educational platforms.

As part of this project, over 20,000 students and 1,000 teachers have benefited from training in digital teaching. The lessons delivered through "School in a Suitcase" include missions, challenges, and symbolic rewards, which transform the teaching process into a collaborative game. Impact studies conducted in 2022 indicate a 35% increase in course participation and a reduction in school dropout rates in rural communities.

- **Kidibot – gamification of reading and general knowledge²²**

The Romanian platform Kidibot²³ is a unique example of gamification applied to reading and general knowledge. Created in 2018 by educational entrepreneurs in Romania, Kidibot encourages primary and secondary school students to read, learn, and participate in themed challenges in the form of "educational missions."

The system includes:

- points and trophies for each completed quiz,
- thematic badges (e.g., "Knight of Books," "Master of Science"),
- local and national rankings,
- competitions between schools and teams.

In 2023, the platform reported over 200,000 active users and a steady increase in interest in extracurricular activities. Kidibot is supported by partnerships with publishers, NGOs, and the Ministry of Education, and is recognized as an innovative educational initiative.

²¹ Adservio, *Digitalizarea educației în România – Impactul platformei Adservio* (2023).

²² C. Ferseta, "Kidibot, the Educational Platform for Kids, Won the Biggest Prize so Far from European Commission," *Ferseta.com*, 2019, <https://www.ferseta.com/kidibot-the-educational-platform-for-kids-won-the-biggest-prize-so-far-from-european-commission/>

²³ *RomanianStartups.com*, "Kidibot – Educational Platform (Romania)," accesat [data accesării], <https://www.romanianstartups.com/startup/kidibot/>

- **Brio.ro and the "Brio Challenge" – gamified standardized testing**

The Brio.ro platform²⁴, officially recognized by the Ministry of Education, offers standardized tests for primary and secondary school students, integrated with gamification elements. In 2022, the Brio Challenge project introduced a competitive testing system in which students receive points and digital badges based on their performance²⁵.

The results are displayed in the form of graphs, rankings, and personalized feedback, giving students a clear picture of their progress. At the same time, teachers receive analytical reports that allow them to adjust their teaching methods.

Brio Challenge promotes a culture of constructive self-assessment, focused on progress rather than punishment, and gamification mechanisms encourage students to surpass their own results.

In academia, gamification is beginning to be introduced into courses in pedagogy, educational psychology, and information technology. Universities such as Babeș-Bolyai University in Cluj-Napoca, the University of Bucharest, and the Polytechnic University of Timișoara are running pilot projects involving the use of Kahoot!, Classcraft, and Moodle platforms in student assessment.

For example, within the Faculty of Psychology and Educational Sciences, UBB Cluj has implemented courses in "Gamified Educational Design," where students design game-based teaching activities, and at the Polytechnic University, programming courses use interactive simulations inspired by the Minecraft Education Edition model.

These examples demonstrate that Romania has begun to create its own gamified educational ecosystem, adapted to local resources and needs. Through the gradual integration of these platforms and programs, the Romanian educational system is gradually aligning itself with international trends, promoting interactive, motivating, and inclusive education.

Comparing international experiences with Romanian ones, there is a difference in maturity and infrastructure, but also a convergence in terms of pedagogical goals. The Nordic countries and the US emphasize full technological integration and student autonomy, while Romania focuses on accessibility and adaptability. However, Romanian experiences demonstrate the high potential of gamification in creating an inclusive educational environment, especially when technology is used as a means of motivation and not as an end in itself. Extending these models nationwide could fundamentally transform the student-teacher relationship, strengthening student autonomy and active involvement in their own learning process.

7. Conclusions

Gamification is one of the most relevant directions of pedagogical innovation in the last decade, managing to transform the educational process from a passive act of knowledge transfer into an active, motivating, and participatory experience. The theoretical analysis and examples

²⁴ Brio.ro, "Teste educaționale standardizate pentru evaluare națională," <https://brio.ro/pilotul-national-testare-standardizata>

²⁵ Ministerul Educației, "Programul-Pilot Național de Testare Standardizată a Elevilor," 10 iunie 2022, https://www.edu.ro/comunicat_presa_32_2022_finalizare_program_pilot_evaluare_standardizata

presented demonstrate that integrating playful elements into education—such as points, badges, levels, missions, and constant feedback—can have significant effects on student motivation, engagement, and performance.

Gamification should not be understood as simply "making school fun," but as a complex pedagogical strategy based on solid theories of motivation and learning. It leverages the principles of self-determination, flow, and operant conditioning, demonstrating that learning becomes more effective when students have control over their own learning process, receive immediate feedback, and feel part of a learning community.

International research findings and experiences in Romania confirm that the application of gamification, when planned and balanced, can significantly improve the educational climate. Examples such as Kahoot!, Duolingo, Classcraft, and Adservio show that gamification stimulates participation, promotes collaboration, and facilitates information retention. At the same time, projects such as Școala din Valiză (School in a Suitcase) or Kidibot demonstrate the potential of gamification in the context of Romanian education, including in environments with limited resources.

However, this method must be applied with pedagogical discernment. Excessive gamification, focused exclusively on rewards, can diminish genuine interest in learning. Therefore, the key to success lies in balance: using playful mechanisms as a means of motivation, not as an end in themselves. Teachers play an essential role in designing these educational experiences, and their continuous training becomes an indispensable condition for the coherent application of gamification.

For Romania, gamification offers the opportunity to modernize the educational process, stimulate student participation, and reduce the differences between urban and rural areas. Integrating this approach into national curriculum policies, developing digital infrastructure, and promoting educational partnerships between schools, universities, and the technology sector can transform gamification into a strategic tool for inclusion and performance.

Looking ahead, future research should focus on the longitudinal assessment of the effects of gamification on motivation and academic performance, as well as identifying the most effective combinations of traditional and digital methods. Only through a scientific, balanced, and locally adapted approach can gamification become a sustainable pillar of modern education, capable of combining the joy of play with the rigor of knowledge.

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