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Challenges of Innovation Through Gamification in the Classroom

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Abstract

The demands of modern society regarding academic training have placed the focus of education on active methodologies. Their proven success also presents challenges for the innovation they entail. In this regard, methodological strategies such as gamification are currently focusing their analyses on design to ensure the effectiveness of their outcomes. With this in mind, we aim to analyse a gamification experience in higher education from the perspective of the various stakeholders involved. Using a qualitative methodology, data from an open-ended survey and the learning journals of 73 students were triangulated with the teaching journals of four lecturers. The category-based data analysis indicates that escape room-type games and digital boards are the most highly valued as innovative educational tools that promote active learning. Conflict resolution, cooperative work, and understanding of theoretical knowledge stood out as achieved objectives. The overall positive view, the classroom atmosphere of excitement and fun, and the impact on learning due to increased motivation were highlighted in participants' opinions. From the lecturers' perspective, the outcome is shown to be worthwhile in terms of effort and benefit.

Keywords: gamification; design; category-based analysis; higher education

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Academic Editors: Chris Campbell and Diego Vergara

Received: 26 June 2025
Revised: 7 October 2025
Accepted: 7 October 2025
Published: 9 October 2025

Citation: Denoni-Buján, M., Marcen, C., Gracia-Gil, A., Casanovas López, R., & Coral-Aguilar, S. (2025). Challenges of Innovation Through Gamification in the Classroom. *Education Sciences*, *15*(10), 1341. https://doi.org/10.3390/educsci15101341

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1. Introduction

Active methodologies have positioned themselves in the field of education as key drivers of academic success. The European Higher Education Area promotes their use as a means of improving educational quality and fostering innovation (Duran et al., 2025). These methodologies focus on students' active participation, encouraging collaboration and experimentation through a teaching model that acts as a facilitator rather than an instructor (Joya-Bonilla, 2023). They comprise techniques and strategies aimed at getting students to actively engage in the construction of their own knowledge (Freeman et al., 2014; Doolittle et al., 2023). Their implementation in higher education has been shown to increase engagement, motivation, and academic performance (Sailer & Homner, 2020; Freeman et al., 2014).

Among active methodologies, gamification is defined as a pedagogical strategy that uses games in non-playful settings (Alsawaier, 2018; Deterding, 2012). Some authors define it as a phenomenon that involves creating playful practices (Hamari et al., 2014). One of the key characteristics of this methodology is the use of game elements, such as

badges, leaderboards, or feedback during gameplay (Deterding, 2012). While the design of gamification is characterized by self-purpose and hedonic goals, its ultimate aim is to support extrinsic and valuable outcomes beyond the gamified system itself, such as learning a subject (Hamari & Koivisto, 2015). It is grounded in motivational theories such as Self-Determination Theory (SDT) by Ryan and Deci (2017) and Flow Theory (Csíkszentmihályi, 1990). SDT includes two sub-theories: *Cognitive Evaluation Theory*, which examines the effects of social contexts (such as external rewards), and *Organismic Integration Theory*, which views motivation as a continuum ranging from intrinsic motivation to amotivation, passing through different types of extrinsic motivation (Quintas-Hijós et al., 2023). Gamified learning has been linked to the development of metacognitive and self-regulatory skills, especially when activities require learners to plan, monitor, and evaluate their actions (Çiftci & Yıldız, 2024; Abbassyakhrin et al., 2024; Checa-Romero & Giménez-Lozano, 2025).

Flow is described as an optimal state of experience in which individuals become fully absorbed in the task at hand. Gamification supports these theories by fostering student autonomy and offering extrinsic rewards, thereby promoting deep engagement and commitment (Hamari et al., 2014; Werbach, 2014). It involves designing playful experiences by transforming learning activities into game-like challenges. The recent literature also underlines that gamified learning can foster immersive and emotionally engaging experiences, particularly when learners experience flow states that enhance sustained commitment and deep learning (Cao, 2025; Lüking et al., 2023; Oliveira & Hamari, 2025).

What sets it apart from other game-based methodologies is the use of specific design frameworks drawn from the world of video games. Notable among these are the PBL model (Points, Badges, Leaderboards) proposed by Werbach and Hunter (2012), and the MDA framework (Mechanics, Dynamics, Aesthetics) developed by Hunicke et al. (2004). These models involve the use of characters, rewards, goals, levels and stages to overcome, badges, and objectives (Denden et al., 2021). This methodology centres on student motivation while also aiming to convey the positive values inherent in educational games (Johnson et al., 2014; Quintas-Hijós, 2025).

The benefits of this methodology, as reported in the literature, are numerous: more meaningful learning (Sailer & Homner, 2020; Werbach, 2014), increased motivation, engagement, and metacognition (Koivisto & Hamari, 2019; Denden et al., 2021), as well as improvements in punctuality, attendance, and classroom participation (Lambruschini & Pizarro, 2015). Furthermore, with regard to digital gamification, improvements have been observed in digital literacy, increased downloading of materials, and participation in forums (Barta et al., 2013; Haruna et al., 2018). Similarly, practices involving group games have been shown to be beneficial in promoting teamwork and social skills (Nyahuye & Steyn, 2022; Hanus & Fox, 2015).

Finally, it is worth noting that students, as active participants in this methodology, view this teaching method positively in higher education, considering it useful for knowledge acquisition (Chan & Lo, 2022; Almisad & Aleidan, 2025). Moreover, improvements in classroom climate, as perceived by students, have been reported in various studies, demonstrating enhancements in student–teacher interaction, classroom dynamism, and enjoyment (Pegalajar-Palomino, 2021; Li et al., 2023).

It is important to note, however, that few studies include the perspective of the designing teacher. Those that do report benefits related to the versatility of the design, which can be adapted to both digital and analogue formats (Caravaca Llamas & Sáez Olmos, 2021). Teachers also perceive a beneficial structured and collaborative environment (Bacsa-Károlyi & Fehérvári, 2024).

Currently, research related to this methodology focuses on game design and the profile of the students it targets. In this regard, several studies suggest that age is a key factor in how students evaluate this methodology (Denden et al., 2021; Denoni Buján et al., 2025), as well as in the classification established for their profile (Vergara et al., 2022). Among the preferences of higher education students are group, collaborative, and digital games (Denoni Buján, 2024). Likewise, profile analysis has revealed associations of interest on several occasions. Thus, the explorer profile is associated with open conflict resolution tasks and narrative elements; the socialiser profile with collaborative or multiplayer experiences; and the competitive profile with leaderboards and performance-based challenges (García-Cabrera et al., 2025). An interesting study by Bicalho et al. (2019) used an algorithm based on previous games to assign each participant the type of game according to their profile. Evaluation of the method revealed an accuracy of between 75 and 80 per cent. Students in technical fields tend to prefer competitive or exploratory games, while those in social sciences tend to prefer collaborative or social games (García-Cabrera et al., 2025). Thus, various studies suggest that when the player's profile and motivations are taken into account, thereby personalising the design, engagement and learning increase (Bicalho et al., 2019; García-Cabrera et al., 2025; Hamari et al., 2014; Medel-San Elías et al., 2022; Vergara et al., 2022).

In higher education, the teacher's role in designing and carrying out gamified experiences is still underexplored. Most available studies adopt quantitative approaches (Subhash & Cudney, 2018) or focus on primary and secondary education (Vrcelj et al., 2023). Although the teacher's influence on student motivation is widely acknowledged, little is known about how teachers themselves perceive the planning and execution of these methods in relation to learning outcomes.

With a focus on design and the perspectives of both students and the teachers who design these experiences, we aim to analyse how both groups perceive the gamified methodology. In doing so, we hope to shed light on the design details that make gamification successful, as well as to explore how the designing teachers view it. Furthermore, analysing the perspectives of both students and teachers will allow us to identify the similarities and differences in how they evaluate the costs and benefits of using this methodology in higher education classrooms. In this way, we aim to answer the following questions: How is a gamified university teaching experience perceived by the students and teachers involved? To what extent is the time and effort invested in implementing this methodology considered worthwhile?

2. Materials and Methods

2.1. Research Design

This study adopts a qualitative, interpretative approach. It is based on an inductive methodological strategy that allows the generation of analytical categories from the data itself, without applying prior theoretical frameworks. This design is based in the principles of grounded theory (Hernández Carrera, 2014; Mejía-Navarrete, 2011), which enabled a progressive analysis of the textual information collected from students and lecturers.

This type of design is common in studies of complex educational experiences in real-world contexts (Pareja de Vicente et al., 2021; Fernández-Cerero et al., 2024), where the focus lies in understanding how educational meanings are constructed from the participants' perspective. Pareja de Vicente et al. (2021) combine in-depth interviews and content analysis to explore intercultural competences, while Fernández-Cerero et al. (2024) use semi-structured interviews and thematic coding via Atlas.ti to examine perceptions of technological tools in a university setting. In line with these studies, this research uses students' and professors' learning and teaching diaries, so it gives answers to two specific

objectives: firstly, to understand students' evaluations of the gamified experience; and secondly, to identify which design elements are perceived as valuable by the teaching staff.

2.2. Participants and Context

The experience took place during the first semester of the 2024–2025 academic year, in a subject taught across two Education degree programmes at a Spanish public university. Three fourth-year class groups took part, with a total of 73 students enrolled in the subject in a classroom-based format. The intervention was designed and implemented by four lecturers who were responsible for the course content and assessment. The overall objective was to explore the perceptions of students and teaching staff involved in a gamified experience developed across two subjects with similar content in the Early Childhood Education and Primary Education degree programmes.

Students were enrolled in a face-to-face course during the first semester of the 2024–2025 academic year. Participation in the gamified experience was part of the regular teaching schedule, and all students were informed of the study's purpose during the first session. Informed consent was obtained for the use of their learning journals as data for educational research. The average age was approximately 20 years (range: 17–24), and the majority were women (around 95%). Students came from two different degree programmes, corresponding to two morning and afternoon groups.

Several games were designed for use in the classes as part of the experience: Jumanji, Escape Room, quiz games, among others, using the Genially website for their design. In addition, apps such as Socrative, Genially, and Kahoot were used.

Three sources of information were analysed for this study. Firstly, responses to an open-ended questionnaire completed by the students at the end of the experience (n = 73). Secondly, learning diaries voluntarily submitted by the students (n = 73). Finally, teaching diaries produced during the process by the lecturers (n = 4). Only materials that made explicit reference to the gamified experience were included. This decision was made to ensure the relevance of the data in relation to the study's aims (Fernández-Cerero et al., 2024).

2.3. Data Collection Instruments

To collect qualitative data, three instruments were used: an open-ended questionnaire, students' learning journals, and teachers' pedagogical reflection journals. These resources captured perceptions from different angles of the learning process. The questionnaire, designed by the teaching team, was administered in digital format at the end of the gamified unit. It included three open questions focused on the activity students considered most useful for passing the subject, the most valued aspects of the gamified experience, and their agreement or disagreement with the idea that gamification supports academic success, along with a brief justification. The responses provided access to students' general evaluations of the intervention, which were complemented by more specific insights in the learning diaries.

Learning diaries are a useful tool for exploring the perspectives of both students and teachers regarding various learning experiences, including the adoption of new methodologies such as gamification strategies. A learning journal enables reflection on one's own study process (Salgado Ramírez et al., 2020). Unlike portfolios, journals are developed over limited time periods (Vain, 2003). Their use has been shown to enhance metacognition and to provide valuable information about students' learning processes (Salgado Ramírez et al., 2020).

This study made use of two types of diaries. On the one hand, learning diaries were written by students after each session, following shared guidelines but with the freedom to express personal reflections. Students were encouraged to include aspects such as what

they had learned, the nature of their participation in the game, emotions experienced, and the perceived usefulness of the activity. On the other hand, teaching diaries, completed by lecturers after each session, included observations about how the activities unfolded, students' reactions, and reflections on their own teaching practice. These journals support teacher self-assessment (Vain, 2003) and have proven useful for analysing pedagogical experiences from a critical perspective.

2.4. Data Analysis

The data analysis followed an inductive strategy based on the development of categories emerging from the collected information. Procedures specific to grounded theory were applied, specifically open and axial coding, to systematically organise and interpret the texts (Hernández Carrera, 2014). The coding was carried out using Atlas.ti software (version 23). The unit of analysis was either a sentence or a paragraph, depending on its degree of semantic autonomy (Mejía-Navarrete, 2011). The three text corpora—questionnaire responses, student diaries, and teaching diaries—were coded separately.

In the first phase, relevant segments were identified and assigned descriptive codes. These codes were then grouped into categories and subcategories based on their content, frequency, and thematic relationships.

The analytical process developed over three phases: data reduction, development of descriptive categories, and construction of interpretations (Rueda Sánchez et al., 2023). During coding, categories such as motivation, conceptual understanding, active participation, and critical thinking emerged, which were not initially anticipated. Their appearance was considered relevant to the interpretation of the experience, and they were incorporated into the category system (Table 1).

Table 1. Main categories and subcategories identified during qualitative data analysis.

Main Category	Subcategory 1	Keywords
References to the activity	Educational Resources	Escape Room, Jumanji Game, Genially, Socrative
	Learning Objectives	Problem-solving, teamwork, motivation, active participation, theoretical understanding
	Content Areas	Early childhood intervention, educational legislation, case studies
Student opinions	General perception of the experience	Positive/Negative opinions
	Classroom Climate	Fun, participative, emotional, calm
	Skills Developed	Communication, creativity, critical thinking, conceptual understanding
	Limitations	Time, clarity of rules, feedback

Coding was carried out by two members of the research team. In cases of discrepancy, code assignments were discussed until consensus was reached. This strategy strengthens the internal coherence of the process and adds rigour to the qualitative analysis. Agreement between coders contributes to reliability in qualitative studies by ensuring consistency in the interpretation of the data (Creswell, 2014).

To clarify the integration process, the two main categories shown in Table 1—references to the activity and student opinions—served as the initial framework for grouping coded units. Each subcategory was assigned to the main category in which its textual evidence appeared, distinguishing between descriptions of the activities and students' evaluative comments. During axial coding, emergent codes such as motivation, conceptual understanding, active participation, and critical thinking were examined for conceptual affinity

and then incorporated into the most semantically related subcategories. This procedure ensured that new meanings were consistently anchored in the overarching category system while preserving the inductive character of the analysis.

2.5. Ethical Considerations

This study is part of the project "Active Methodologies as a Tool for Motivation and Academic Success" at the University of Zaragoza. It involved higher education students in regular university courses and used two data sources: learning/teaching diaries and an anonymous online questionnaire.

All participants were informed of the study's aims, data protection measures, and the academic use of the data. Participation was voluntary and had no impact on academic assessment. Written consent was obtained for the use of the diaries, and explicit consent was collected via a preliminary question in the online survey.

No personal or sensitive data were gathered. All identifying information was removed before analysis. Teaching diaries were analysed by researchers other than their authors to ensure neutrality. According to the University of Zaragoza's 2024 ethics guidelines, studies of this nature do not require ethics committee approval.

2.6. Trustworthiness and Rigour

The criteria of credibility, transferability, dependability, and confirmability were addressed to ensure the quality and rigour of the qualitative analysis (Lincoln & Guba, 1985). Credibility was reinforced through source triangulation (questionnaires, learning and teaching diaries) and through consensual coding by two researchers—a strategy that contributes to interpretative consistency within the category system. Transferability was approached through a thick description of the context, instructional design, and student characteristics, allowing readers to assess the applicability of the findings to similar educational settings (Lincoln & Guba, 1985). This strategy aligns with the concept *of thick description*, enabling readers to make informed judgments about the relevance of the results to their own context.

Dependability was ensured through the systematic use of qualitative analysis software (Atlas.ti), the drafting of memos, and the sequential recording of analytical decisions. This makes it possible to establish a clear logic of how interpretations were reached, thus improving the auditability of the process (Miles et al., 2014). Finally, confirmability was strengthened by ensuring that researchers did not analyse their own teaching journals. This analytical distance, together with the documentation of decisions, aimed to minimise bias and ensure that interpretations emerged from the data rather than from the researchers' expectations (Lincoln & Guba, 1985; Miles et al., 2014).

3. Results

3.1. Resources Used in the Activities

Participants identified various resources used in the gamified activities as elements that facilitated content comprehension and encouraged participation. The Genially-made tools were mentioned in the learning diaries as an interactive support that aided group work and concept visualisation: "It helped us work together, share what we saw, and understand the topic better" (Journal_Stu_04).

The Escape Room, designed with the same tool, was valued for its ability to review complex content in a practical way, particularly educational legislation and the White Paper on Early Childhood Intervention, the reference manual of the subject. Its format was described as accessible and collaborative, enabling the application of knowledge in simulated scenarios: "With the Escape Room we revised laws without it feeling like theory. It was like applying what we had read" (Journal_Stu_01). Lecturers recorded similar

impressions in their journals: "When working in groups to solve cases, they got involved without me needing to intervene" (Journal_Teach_2).

Regarding the Jumanji board game, adapted to the digital environment, students found it useful for consolidating normative content, especially concerning Early Childhood Intervention. Its collaborative dimension and competitive component were highlighted as factors that increased engagement: "We were driven to do it well, but you also had to explain things to your group" (Journal_Stu_09). Despite overall acceptance, some difficulties were noted, such as the number of questions or the lack of immediate feedback in some tasks: "It was good, but there were too many questions. Some were hard without knowing whether they were right or wrong" (Journal_Stu_06). One participant mentioned: "At first I didn't understand how the game worked, but then it got better" (Journal_Stu_10).

The use of Socrative was appreciated for its ability to provide immediate feedback. The quiz on regional legislation was considered demanding but useful for reviewing content before assessment: "It helped me see what I had understood and what I hadn't. I'd use it again before the exam" (Journal_Stu_05). From the teaching perspective, it was valued as a formative assessment tool, though it was observed to generate less emotional engagement than the Escape Room: "It's good for seeing what they remember, but it doesn't hook them as much as the game" (Journal_Teach_3).

Questionnaire responses highlighted the value of novel tools and the possibility of working on complex issues through play, for example "It is a way to work on complex aspects such as legislation through games" (Quest.1.3) and "I liked knowing my progress in the subject and the motivation it generated" (Quest.1.6). Teachers' diaries converged on these points and noted that the choice of resources facilitated group management and sustained attention, with no substantial divergences across the three sources.

3.2. Activity Objectives and Content Areas

Problem-solving: Students appreciated that the activities promoted strategic thinking and the practical application of content. They highlighted learning through experience, even in complex dynamics: "At first it was difficult, but then you understood better how to solve the challenges" (Diary_Stu_07). The playful environment was also seen as supportive of decision-making and collective problem-solving: "We had to talk and think together about how to do it" (Diary_Stu_02).

Cooperative work: Collaboration was one of the most frequently mentioned aspects. Students indicated that teamwork helped organise ideas and achieve objectives: "If we didn't talk to each other, we couldn't move forward" (Diary_Stu_10). From the teaching perspective, pairing students was seen as a way to foster an orderly classroom environment: "Grouping them in pairs helped the class run smoothly and quietly" (Diary_Teach_1). It was also considered that the absence of final scores in some of the activities contributed to a non-competitive atmosphere.

Understanding theoretical content: The activities were perceived as useful for understanding complex regulatory concepts. The visual and dynamic presentation of educational legislation was especially appreciated: "I never thought understanding laws could be fun" (Diary_Stu_03). Repeated review through games was also seen as helpful in consolidating content: "Repeating it in games helped me memorise it better" (Diary_Stu_06). The use of practical cases was highlighted as key to applying theory: "We saw how what we study is used in real cases" (Diary_Stu_08).

Students underlined that gamification allowed them to "learn theoretical content in a more playful way" (Quest.1.8). These views were consistent with diary entries, which offered detailed examples of how tasks supported understanding. Teachers' diaries coincided in noting the clarity with which objectives were achieved, although they paid greater

attention to sequencing and time management, a difference that reflects complementary rather than contradictory perspectives.

3.3. Classroom Climate

Enjoyment: The atmosphere was described as dynamic and enjoyable. Games such as Jumanji and Kahoot were appreciated for combining learning with fun: "I learned more because I had a good time" (Diary_Stu_03). The teaching staff noted an enthusiastic environment: "They were motivated and participated without being asked" (Diary_Teach_1). Occasional challenges in managing the energy level during some sessions were also acknowledged: "There was a lot of excitement, but sometimes it was hard to steer the class back on track" (Diary_Teach_2).

Participation: Students highlighted that the dynamics encouraged their involvement: "We did more than in a normal class; we all participated" (Diary_Stu_05). The lecturers agreed that a collaborative environment was achieved, even during online forums: "They logged in to discuss answers and work in groups" (Diary_Teach_3).

Emotions: The lecturers identified moments of excitement and positive tension during the activities, especially in competitive games: "They were visibly nervous about winning, but always in a good atmosphere" (Diary_Teach_2). The playful component was also observed to generate positive expectations: "They wanted to know what we were going to do because they knew it would be something different" (Diary_Teach_1). On one occasion, an initially tense atmosphere caused by external factors (academic workload and teaching coordination) was mitigated over the course of the session: "They started out stressed, but the activity helped change the mood" (Diary_Teach_3).

Calmness: During individual phases, a calm and focused atmosphere was noted: "At first we were silent, each of us focused on our own task" (Diary_Stu_04). The lecturers noted that this calmness varied depending on the phase of the game: "The first round was orderly, the second noisier because they already knew how to play" (Diary_Teach_2).

Many questionnaire comments valued "the good atmosphere in class" (Quest.1.27). Student diaries confirmed this atmosphere, often linking it to reduced anxiety before exams, while teachers' diaries focused more on mood fluctuations at the start of sessions and on how specific dynamics helped to calm or activate the group. Together, these perspectives provide a coherent picture of a motivating learning environment.

3.4. Skills Developed

Communication: Cooperative work required verbal coordination to solve challenges: "If we didn't explain ourselves well, we couldn't move forward" (Diary_Stu_02). Improvement in oral expression was also mentioned: "Speaking to explain the answers helped me become more confident" (Diary_Stu_07).

Creativity: Students noted that tools like Genially encouraged the creation of their own materials: "Designing something from scratch helped me think about how to explain it to others" (Diary_Stu_04). The Escape Room was also valued as a space for proposing original solutions: "We had to come up with ways to overcome the obstacles" (Diary_Stu_01).

Critical Thinking: Several diaries referred to active reflection on content, especially when making decisions during the games: "We had to think about whether what we answered made sense, not just get it right" (Diary_Stu_06). The connection between theory and practice was mentioned as a support for deeper analysis: "Applying what we study to the cases helped me understand it better" (Diary_Stu_09).

Students reported "having to explain the answers to my group" (Quest.1.40) and "thinking beyond the topic being taught" (Quest.1.11), evidencing communication and critical thinking. Their diaries confirmed these aspects through detailed examples. Teachers

complemented these accounts with observations of improved oral expression and peer support, and no significant divergences were identified.

3.5. Overall Evaluation and Limitations

Most students gave positive feedback on gamification as a strategy for addressing complex content. Its usefulness for understanding educational legislation was highlighted: "I had never understood the laws so easily" (Diary_Stu_05), and the opportunity to contextualise them through practical cases was appreciated: "Seeing real examples helped me understand what they're for" (Diary_Stu_03).

These activities were also recognised for breaking away from the routine of lecture-based methods: "It wasn't like just sitting and listening the whole time" (Diary_Stu_06). Lecturers confirmed this perception, noting increased participation and enjoyment: "You can tell they enjoy it and that they learn through play" (Diary_Teach_2).

Despite the overall positive evaluation, some limitations were expressed. Some students felt that repeated use of gamified activities might reduce their effectiveness: "If everything is a game, you lose focus a bit" (Diary_Stu_08). There were also comments on the need to complement these methods with more traditional strategies to ensure long-term learning: "They're good for review, but I'm not sure I'll remember it in a month" (Diary_Stu_07).

From the teaching perspective, the return on effort was considered worthwhile: "Even though they take time to prepare, they're always worth it" (Diary_Teach_1). However, areas for improvement were noted in the planning, such as clearer instructions and better time management for each activity.

Questionnaire responses supported this overall evaluation, noting that gamification "makes the learning process more engaging and helps retain key concepts" (Quest.2.19), while also acknowledging, as in some student diaries, the need to combine it with other approaches for lasting learning. Overall, the three data sources converge on a positive but nuanced view of gamification.

4. Discussion

This study aimed to analyse both the teaching and student perspectives on the use of gamified methodology in higher education. The categorisation of the data obtained from teaching diaries, learning diaries, and open-ended responses allowed for the analysis of design aspects, as well as the overall success of the methodology. The experience implemented in a higher education classroom focused on subjects related to early childhood intervention. In addition to discipline-specific content, students worked with legislation and practical case studies. A variety of games were designed to target different skills, objectives, and resources. Beyond analysing the activities themselves, the study also evaluated the experience's impact on classroom climate, learning, and the overall perception of the teaching–learning process under a gamified approach.

4.1. Student Perceptions and Learning Outcomes

The results show that students rated the gamification experience in class positively, reporting a beneficial impact on severa#l aspects of the learning process. One of the most relevant findings is the widespread recognition that tools such as Genially and Socrative enhanced understanding and retention of complex content. This positive evaluation can be interpreted through the lens of Self-Determination Theory (Ryan & Deci, 2017). According to SDT, motivation increases when three basic psychological needs are fulfilled: competence, autonomy, and relatedness. The dynamics implemented in the activity allowed students to make decisions, collaborate in teams, and experience a sense of progress in their tasks.

As a result, all three motivational components were reinforced. In particular, the use of the Escape Room and Jumanji games helped transform educational legislation into more accessible and collaborative learning experiences. In this regard, cooperative work was also highly valued, with students highlighting that the activities encouraged communication and collective strategy-building.

Recent contributions to Flow Theory highlight the role of intrinsic motivation and emotional engagement in gamified environments. Cao (2025) emphasizes that prior game experience enhances positive emotions and fosters flow states. Similarly, Lüking et al. (2023) and Oliveira and Hamari (2025) report that flow arises when challenges align with learners' skills, leading to deeper engagement and satisfaction. Although our study did not measure flow directly, participants' spontaneous reports—such as enjoyment, loss of time awareness, and the desire to repeat activities—suggest the presence of flow-like experiences, reinforcing the value of gamification when aligned with students' autonomy and interests. In this respect, some studies have linked gamified experiences with the longing for childhood games, suggesting that teachers' prior knowledge of these aspects in their students may be key to designing game-based experiences in the classroom (Denoni Buján, 2024).

Another range of studies suggest that gamified learning environments also enhance metacognitive development. Çiftci and Yıldız (2024) demonstrated that involving students in digital game design using metacognitive strategies—such as planning, predicting, monitoring, and evaluating—led to significant improvements in both academic performance and metacognitive awareness. Abbassyakhrin et al. (2024) showed that game-based activities designed with metacognitive scaffolding helped learners regulate cognitive load and engage in reflective thinking throughout the learning process. In a broader synthesis, Checa-Romero and Giménez-Lozano (2025) found that video games designed for educational purposes can effectively support the development of 21st-century skills, including metacognition, particularly when they include tasks that require strategic decision-making, self-assessment, and reflection. These findings align with our own observations, as participants in our study often reported moments of planning, evaluation, and adjustment during the gamified sessions, suggesting that such activities may also foster metacognitive habits essential to autonomous and meaningful learning. In this way, the results of this study suggest that students have felt competent, autonomous, and have established positive relationships in their gamified practices. These experiences are accompanied by emotional engagement and the resulting intrinsic motivation. This could be explained, as suggested by Denoni Buján (2024); Denoni Buján and Muñío (2025); Gracia-Gil (2025), by the longing for past play experiences. Therefore, for the design of future experiences, it is recommended to consider students' childhood games. Likewise, the metacognitive work that has been observed may be influenced, in terms of motivation, by this emotional component. In this sense, complementing classroom play experiences with the design work may allow for a holistic and meaningful approach that leads to deep learning.

4.2. Teacher Observations and Activity Design

From the professors' perspective, the Jumanji and Escape Room activities stood out as the ones in which students showed the most enthusiasm, demonstrating engagement and collaboration by gathering around computers to play as teams. It is worth noting, however, that teachers attributed this success to the absence of competitive games with final scoring and the lack of individual activities. They also highlighted the value of question–answer tasks and videos that promote healthy competition without a focus on final outcomes. These findings align with other studies that report increased student motivation, interest, and participation in the learning process, as well as the development

of key skills such as collaboration and the creation of learning communities—thus fostering a more inclusive and participatory environment (Seaborn & Fels, 2015; Hanus & Fox, 2015; Pegalajar-Palomino, 2021).

From this perspective, the implementation of playful activities in the classroom should rely on a cooperative methodology and group work. The social component, so necessary and self-determining in students, can be a key factor in generating flow experiences, as well as in learning and motivation (Cao, 2025; Lüking et al., 2023; Oliveira & Hamari, 2025; Ryan & Deci, 2017).

4.3. Development of Skills Through Gamification

In terms of skill development, students reported improvements in problem-solving, creativity, communication, and critical thinking. They indicated that gamified activities allowed them to face challenges strategically, encouraging reflection on practical application. Students emphasised that the dynamics promoted deep thinking and questioning of the content being studied. From the teaching perspective, the Escape Room was seen as a key tool for promoting effective communication, as students had to coordinate and express their ideas clearly in order to progress. The teaching team also observed that the high level of motivation generated by the activities contributed to greater concentration and commitment, especially when students were allowed to make decisions—such as choosing a team symbol or avatar to represent them. These findings support the idea that gamification enables students to acquire both knowledge and skills (Hanus & Fox, 2015; Subhash & Cudney, 2018). The involvement that the activity required from the students may have activated their critical thinking; in this way, as reported by Cebollero-Salinas and collaborators (2025), deep learning may also have emerged. Thus, challenge and skills may have combined, creating a state of *flow* in the students (Csíkszentmihályi, 1990).

4.4. Classroom Climate and Emotional Engagement

Regarding classroom climate, the teaching team noted that pair work was key to maintaining structure and order, facilitating cooperation. Games were also important for shifting the classroom atmosphere when students expressed academic stress. Teachers pointed out that, although the classroom climate was initially calm, the introduction of group games and interactive dynamics brought noise and apparent disorder. Cool-down activities were suggested and seen as necessary. The combination of interaction and concentration was viewed positively. Both students and teachers reported a more positive attitude towards classes and a relaxed, supportive environment, highlighting improved communication. In this regard, some studies suggest that it is the relationship between educational stakeholders that fosters commitment and motivation. The coexistence of moments of noise, intense concentration, and shared emotions in the classroom can be interpreted through the lens of Flow Theory (Csíkszentmihályi, 1990). This framework describes the flow state as an optimal experience of cognitive and emotional engagement, triggered by clear goals, immediate feedback, and a balance between challenge and skill. Observational indicators—such as the need for cool-down activities after group games or students' full immersion in the task—align with this theoretical model. The recent literature on gamified learning environments reinforces the interpretation of such activation patterns as markers of flow dynamics (Lüking et al., 2023).

On the other hand, the criticisms identified in the learning diaries provide key insights for improving future implementations. Some students mentioned that the lack of feedback for certain questions in the Jumanji game hindered their learning, underscoring the importance of incorporating formative assessment mechanisms into gamified experiences. Additionally, the perceived overload of questions and initial difficulty in understanding the

rules suggests the need to optimise activity design to ensure a balance between challenge and accessibility.

Knowledge retention also emerged as a significant factor. Students reported that the combination of gamified methodologies with follow-up assessments helped consolidate long-term learning. Pegalajar-Palomino (2021) emphasises that gamification can enhance academic performance and content internalisation when combined with structured learning strategies. These insights, along with participant feedback, highlight the need to address certain limitations and guide future research directions.

4.5. Limitations and Future Direction

4.5.1. Dependence on Design and Perception

Some studies suggest that the motivating power of gamification lies in students' perceptions—a view echoed by this research (Koivisto & Hamari, 2019; Li et al., 2023). Likewise, this study further supports the considerable benefits of gamification in providing a rich and high-quality educational experience (Pegalajar-Palomino, 2021). Nevertheless, as highlighted in this study, the effects of gamification may vary depending on how activities are designed (Dichev & Dicheva, 2017). Once again, design emerges as the core element in determining the success of gamification.

4.5.2. Concerns About Retention and Motivation

Although students and teachers reported high levels of engagement, some critical aspects emerged that align with the existing literature. Dichev and Dicheva (2017) point out that solid empirical evidence on the long-term benefits of gamification is still lacking, particularly regarding content retention and sustained motivation. Similarly, a meta-analysis by Huang et al. (2020) found that while gamification shows small but significant positive effects on learning outcomes, the motivational and behavioral effects tend to be less stable and heavily dependent on specific design elements and contextual factors. In our study, some students expressed doubts about the long-term retention of knowledge acquired through games and highlighted the risk of losing focus when all activities are gamified. These findings suggest that although gamification can enhance student experience and engagement, its effectiveness relies heavily on thoughtful instructional design and careful integration into broader pedagogical strategies.

Likewise, given the evidence regarding student profiles and their relationship with motivation and the type of game presented to them (Bicalho et al., 2019; García-Cabrera et al., 2025; Hamari et al., 2014; Medel-San Elías et al., 2022; Vergara et al., 2022). It would be interesting for future studies to consider this. In this regard, we also believe it is important to focus on training university teachers in gamification, with special emphasis on detecting student profiles for a more effective educational experience (Vergara et al., 2022).

4.5.3. Voluntariness and Sample Limitations

Participation in the learning diaries and open-ended reflections was voluntary. This may have introduced self-selection bias, favouring students more engaged or positively predisposed to the experience. In addition, the sample size was limited, prompting the need for replication—not only through qualitative approaches but also quantitative ones—to provide statistical evidence supporting the results.

4.5.4. Temporal and Contextual Specificity

The study was conducted in the final weeks of the academic semester. This timing may have influenced students' cognitive and emotional availability, especially given their parallel academic demands. Moreover, contextual factors such as class dynamics, assessment load, and overall stress could have shaped both participation and perception.

4.5.5. Disciplinary Scope and Transferability

The intervention took place in courses linked to Early Childhood and Primary Education. Students in these degrees may be more receptive to playful and collaborative learning strategies. Therefore, findings may not be generalisable to other disciplines with different pedagogical cultures. Future research could explore gamification in varied academic settings to assess how disciplinary background influences its implementation and perceived effectiveness.

Future studies could complement the qualitative approach with validated quantitative instruments to assess students' flow experience. The Flow Short Scale (FSS) and the EduFlow Scale (Heutte et al., 2021), allow researchers to examine components such as absorption, enjoyment, and intrinsic motivation during specific learning activities (Rheinberg et al., 2003; Wonders et al., 2025). Using these tools would help to distinguish flow from other motivational states and to deepen the understanding of how gamification supports optimal engagement.

4.5.6. Unmeasured Individual Differences

Personality or player-profile variables has not been measured; therefore, potential moderation by these factors could not be examined. This omission limits the interpretation of differential responses to specific game elements across learner subgroups. Future research should test whether personality traits (e.g., Big Five) and player profiles moderate the effects reported here. Prior studies document differential responses to points, badges, leaderboards, and competitive elements by personality, and profiling approaches have been used in engineering education to align activities with player types (Smiderle et al., 2020; Denden et al., 2021; Vergara et al., 2022). Studies should include validated measures and be adequately powered to detect interactions.

5. Conclusions

This study focused on gamified teaching methodology in higher education and provides further evidence of the important role that game design plays in the success of this approach. It also highlights specific design elements that contribute to that success. Student decision-making, cooperative group and pair-based games, escape rooms, and quizzes are among the key aspects to consider when designing gamified experiences.

Moreover, this study sheds light on the teaching perspective, which remains underexplored. The cost–benefit outcomes have been clearly demonstrated, along with the time-consuming yet essential nature of careful design. On the other hand, the student perspective has once again confirmed the effectiveness of this methodology.

Author Contributions: Conceptualization, M.D.-B. and S.C.-A.; methodology, A.G.-G. and C.M.; software, A.G.-G.; validation, C.M.; formal analysis, A.G.-G.; investigation, A.G.-G. and M.D.-B.; resources, C.M. and M.D.-B.; data curation, A.G.-G.; writing—original draft preparation, M.D.-B. and R.C.L.; writing—review and editing, M.D.-B., S.C.-A. and R.C.L.; visualization, A.G.-G. and M.D.-B.; supervision, C.M.; project administration, C.M.; funding acquisition, M.D.-B. All authors have read and agreed to the published version of the manuscript.

Funding: This text has been made possible thanks to institutional support from the Competitive Call for Innovation Projects of the University, PIIDUZ_1 Emerging, number 5301, funded by the University of Zaragoza (Spain), entitled "*Active Methodologies as a Tool for Motivation and Academic Success*".

Institutional Review Board Statement: Participation in this study adhered to the ethical standards set out in the Declaration of Helsinki (World Medical Association, 2013): participation was voluntary, with individuals providing free and informed consent for the use of their data for research purposes and being informed that they could withdraw from the study at any time. Data were

handled confidentially, with full respect for participants' privacy. In accordance with current Spanish regulations and institutional policies at the University of Zaragoza, ethics approval from a Research Ethics Committee was not required.

Informed Consent Statement: Written informed consent was obtained from the participants for the publication of this article.

Data Availability Statement: No new data were created or analysed in this study due to privacy or ethical restrictions. Data sharing is not applicable to this article.

Conflicts of Interest: The authors declare no conflicts of interest.

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