Applying Gamification in Classroom settings

Weplay Erasmus + project

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References

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Gamification has gained increasing attention as an innovative pedagogical approach with the potential to enhance student engagement, motivation, and learning outcomes across educational settings. By integrating game-informed design principles into non-game contexts, gamification offers educators structured ways to support active participation, persistence, and meaningful interaction with learning content. In primary education in particular, gamified approaches can help create developmentally appropriate learning experiences that foster curiosity, autonomy, and collaboration.

At the same time, persistent disparities between rural and urban schools, especially in terms of access to enriched learning experiences and digital opportunities, highlight the need for scalable, inclusive and interactive educational methodologies. Digital gamification, when thoughtfully designed, can contribute to bridging these gaps by enabling shared learning pathways, collaborative activities and comparable learning experiences regardless of geographical context.

Within this context, there is a growing need for educational platforms that not only implement gamification but also support teachers in designing pedagogically sound gamified learning pathways. Many existing tools focus on isolated game elements, offering limited guidance on how to align gamification with learning objectives and classroom practice.

Within the framework of the WEPLAY Erasmus+ Project (2025-1-ES01-KA220-SCH-000351661) (Home), a report providing a research-informed foundation to nourish the design of a digital platform that empowers primary school teachers to create, adapt and implement gamified pathways in their classrooms, while simultaneously developing their understanding of gamification as an educational method rather than a collection of game mechanics. This inventory corresponds to Work Package 2 (WP2), Application of Gamification in the Classroom. The main objective of this work package is to carry out an initial study on the application of gamification in the classroom, based on a systematic search of the scientific literature, research and training projects of the European Commission, as well as other international databases. The purpose is to provide a corpus for the development of the objectives in: WP3- Development of Weplay platform, WP4- Pilot studies of Weplay platform.

The purpose of this report is to analyze and document the application of gamification in educational contexts, distinguishing it from game-based learning and to synthesize scientific evidence, identifying validated criteria and practical strategies that foster motivation, collaboration and inclusion, with a particular focus on promoting digital connectivity between rural and urban schools. Ultimately, the report aims to serve as the foundational framework for the design and development of a gamification platform, ensuring that its structure and features are grounded in research-based insights and educational best practices.

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Conceptual Framework

Definition and conceptualization

Gamification is broadly defined as the use of game design elements in non-game contexts[1]. This definition encapsulates the practice of borrowing components characteristic of games and integrating them into systems, services, and activities that are not games themselves. According to Kapp (2012) the goal is to create a system based on different mechanics of playing a game such as levels, badges, point systems, scores and time limits in which a person is willing to invest time, energy, and brain power[2]

The primary aim of gamification is to increase engagement, motivation and behavioural change[2,3,4], as well as promote learning, capacity for solving problems[2] or drive innovation[5]

Gamification in education refers to “the introduction of game design elements and gameful experiences in the design of learning processes”[6]. The concept arises from the recognition that many conventional educational practices fail to sustain learner involvement, and draws from fields such as behavioural economics, experience economy and game design to structure “playful” ‘non-game’ learning experiences[4]. However, merely introducing game-like elements does not translate to motivation and engagement[7]. Gamification at school should offer learners the opportunity to experiment with rules, emotions, and social roles in order to develop new frameworks for understanding their school-based activities[7]. According to Triantafyllou et al. (2025), gamification is a method for redesigning learning processes by taking the best from game mechanics to enhance motivation for learning, provide meaningful learning experiences and enjoyment, help develop problem-solving skills and provide opportunities for making progress at one´s own pace[8].

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Gamification consists of different game elements. Some of the most common elements include points, badges and leaderboards or Play-Based Learning[9].

In their well-known Mechanics-Dynamics-Aesthetics (MDA) framework (Table 1), Hunicke et al. (2004) distinguish three elements[10]:

- Mechanics refer to the particular components of the game.
- Dynamics refer to the run-time behaviour of the mechanics acting on player inputs and outputs over time.
- Aesthetics refer to the desirable emotional responses evoked in the player when interacting with the game system.

Table 1
Overview of gamification design frameworks

Gamification Design Framework	Essential Structural Elements	Applicability
MDA	Game mechanics, dynamics, aesthetics	Gamification design method targeting specific user emotions
Fogg behavioral model	Motivation, ability, prompts (triggers)	Design of gamified loops of engagement towards behavioral change
ARCS	Attention, relevance, confidence, satisfaction	Conceptual model aiming at sustainable learner motivation and positive experience
Oktalysis	Epic meaning, accomplishment, empowerment, ownership, relatedness, scarcity, curiosity, avoidance	Human-focused gamification design around eight basic motivational drives toward user engagement optimization
RECIPE	Reflection, exposition (story), choice, information, play, engagement	Gamified, storified experience design towards meaningful, deep learning
6D	Objectives, target behaviors, player's profile, activity loops, fun, deployment	Sequential, iterative gamification design model based on design thinking

Note. Christopoulos, A., & Mystakidis, S. (2023). Gamification in Education. Encyclopedia, 3, 1223–1243. https://doi.org/10.3390/encyclopedia3040089

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In the field of education, Manzano-León et al. (2021) found that the most used gamification elements are points, badges, rewards, rankings and narrative. Focusing on primary education[11], Romero-Rodríguez et al. (2024) found that achievements are the most widely used elements in gamification[12].

- Points: Scoring mechanism which tracks user actions.
- Badges: visual representations of achievements that can be seen by everyone involved in the game.
- Achievements: proof of the objectives that are being achieved.
- Narrative: An attractive and coherent story that links all the elements and sets the scene[13].
- Rewards: Resources, bonuses and power-ups used to enhance the learner experience[14].

Nevertheless, this list of game elements is not exhaustive. Other elements include: avatars, leaderboards, levels, missions, challenges, quests, turns, non-player characters, educational tutorials, reflection, demonstration, sensation, audio, fantasy, fellowship[15], progress bars[8], playful activities, events, feedback/assessment, choices, competition and profile development[11].

To support practical implementation, these elements can be functionally grouped into four categories:

a) progression and structure (levels, missions, progress bars)
b) feedback and reinforcement (points, badges, achievements)
c) narrative and meaning-making (storytelling, roles, avatars)
d) social dynamics (collaboration, cooperation, limited competition)

This functional grouping facilitates their translation into coherent platform features rather than isolated mechanics.

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It is important to note that multiple elements are required to turn gamification into an effective learning experience and that particular attention should be placed on the interplay of the different elements[2]. In fact, research shows that when there are only one or two gamified elements, the effects on student motivation are smaller or may be negative, highlighting the idea that a diverse gamified environment is essential[11]

IIn primary education, Christopoulos and Mystakidis (2023) recommend using elements such as badges, certificates, dynamic progression bars, avatars and feedback[15]. They also suggest finding a balance between competition and cooperation, focusing on foundational academic abilities and problem-solving skills and incorporating these elements into the curriculum especially focusing on core subjects such as basic arithmetic operations and foundational grammar rules[15].

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Difference between Gamification and Game-based Learning

Across the literature, gamification and game-based learning (GBL) are related but distinct. Gamification denotes the integration of game elements (e.g., points, badges, levels, leaderboards, avatars, narrative) into non-game activities to shape motivation and guide complex, often collaborative, academic work over extended periods (weeks to months). Typical features include team structures with defined roles/avatars, progression via levels and badges, XP sometimes substituting for grades, and an emphasis on prosocial, goal-directed behaviors within a redesigned classroom ecology[1, 2, 3, 4].

By contrast, GBL focuses on the development and use of games that are specifically designed with learning objectives in mind5. A complete game is used as the instructional medium: learners acquire or reinforce content through play. According to Al-Azavi et al. (2016), GBL refers to the "use of games to enhance the learning experience"[6] (p. 134). Similarly, Wu et al. (2012) define it as "'learning through the game', rather than 'learning to play the game'"[7] (p. 269). Plass et al. (2015) argue that GBL involves finding the right balance between the need to teach the subject matter and the desire to prioritize game play and they propose a GBL model that consists of three key elements: a challenge, a response, and feedback (see Figure 1)[8].

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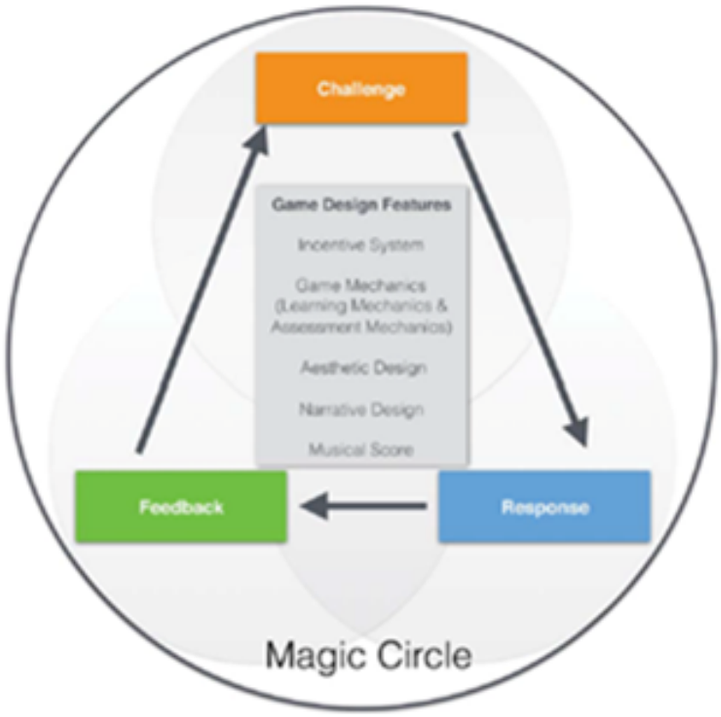
Figure 1
Model of game based learning



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In classroom practice, GBL is typically short in duration (minutes to ~1 hour), bounded to single activities, with simple structures and clear winners (often individual in digital GBL), and can be analog or digital (e.g., quiz games like Kahoot, Quizizz, Jeopardy)[2,4,6].

Comparing gamification and GBL, gamification "wraps" existing instruction with a game-like layer, reorganizing tasks into missions with social roles, persistent progression, and cooperative interdependence, while in GBL, the game is the learning activity, delivering educational content and immediate practice[1,2,3,4]. In short, the key distinction is that gamification aims to make a non-game activity more engaging, whereas game-based learning uses a complete game as the primary vehicle for instruction.

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Theoretical underpinnings

In education, gamification is not effective because it is “game-like” per se, but because specific design elements activate well-established motivational and learning mechanisms. Gamification works best when game elements are explicitly grounded in psychological and instructional theories rather than added superficially[1].

2.3.1 Motivation-based perspectives

Self-Determination Theory (SDT): Self-Determination Theory distinguishes autonomous motivation (doing an activity because it is interesting or personally meaningful) from controlled motivation (driven by external pressure or rewards)[2,3]. Autonomous motivation is fostered when three needs are supported: autonomy, competence and relatedness. Gamified environments can address these through meaningful choices and optional challenges (autonomy), clear progress and mastery paths (competence), and collaborative missions or teams (relatedness). When these needs are met, learners are more likely to internalize goals and persist[4,5].

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Behavioral reinforcement: From a behavioral perspective, immediate, contingent feedback strengthens desired behaviors. Building on Thorndike's law of effect (responses followed by satisfying consequences are more likely to recur) and Skinner's work on operant conditioning[6,7], points, badges, and streaks can reinforce participation, practice, or strategy use, particularly for routine tasks[8,9]. Their effectiveness increases when such rewards are informative (signalling progress toward meaningful learning goals) rather than functioning as arbitrary prizes. In the gamification literature, this is often described as the use of "reinforcing stimuli" that shape behavior over time[1].

Goal-setting, expectancy–value and self-efficacy: These theories emphasize clear, attainable goals and beliefs about success. Levels, quests, milestones, and transparent criteria can increase learners' expectancy ("I can succeed") and perceived value ("this is worth doing"), sustaining effort through proximal goals[5,10]. Visible indicators of progress (mastery badges) plus timely, diagnostic feedback can strengthen self-efficacy and persistence.

2.3.2 Learning process perspectives

Experiential Learning Theory (ELT): Kolb's Experiential Learning Theory conceptualizes learning as a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation[11]. Gamified activities can be designed to move learners through this cycle: challenges or simulations provide experience; short debriefs or prompts encourage reflection; linking in-game events to underlying concepts supports abstraction; and new quests enable experimentation. The emphasis on learner-centred, discovery-based progression aligns with core principles of gamified learning[4].

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Flow theory: Flow describes a state of deep immersion and enjoyment when challenge matches skill[12]. Video games illustrate how adaptive difficulty, clear goals, and rapid feedback keep players "in the zone." Gamified learning environments aim to replicate this by calibrating task difficulty to learners' current competence and adjusting it gradually. Poor calibration risks anxiety (too difficult) or boredom (too easy), whereas a well-tuned challenge–skill balance can support sustained engagement[4].

Social constructivism and cooperative learning: From a social constructivist and cooperative learning view, knowledge is co-constructed through interaction and shared problem solving. Gamified classrooms can support this via teams, shared quests, and peer feedback, creating positive interdependence rather than pure competition. These social mechanics prompt explanation, negotiation and joint decision-making, which deepen understanding[9,10].

2.3.3 Gamification-specific frameworks

Input–Process–Output model: Garris and colleagues' (2017) theory proposes that well-designed instructional content (input) triggers a motivational "game cycle" (process) that leads to desired outcomes (output)[13]. Game elements such as challenge, feedback, and narrative are viewed as design features that keep learners returning to the content through repeated cycles of engagement, practice, and feedback[4].

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Theory of Gamified Learning: Landers' (2014) Theory of Gamified Learning builds on serious games research and the Input–Process–Output model[14]. It posits that (a) instructional content directly affects learning outcomes, and (b) game elements shape learner attitudes and behaviors (e.g., effort, time on task), which in turn affect those outcomes. Game elements thus moderate the impact of instructional material: they can strengthen or weaken learning by influencing how learners engage with otherwise identical content[4]. The emphasis on learner-centred, discovery-based progression aligns with core principles of gamified learning highlighted by Mathew and Nair (2024)[4]
.

Technology Enhanced Training Effectiveness Model (TETEM): Adapting classic training models, TETEM highlights that the impact of gamification is conditioned by organizational characteristics (climate, supervisory support) and learner characteristics (attitudes toward game-based learning, prior gaming experience)[15,16]. Supportive climates and positive attitudes facilitate engagement with gamified materials, whereas sceptical contexts or high cognitive load from unfamiliar interfaces can limit their effectiveness[4].

Consistent with recent review work, gamification appears most effective when combined with instructional design principles and when gamified experiences are personalised to learners' profiles and contexts[1,4]. In sum, gamification is most likely to enhance engagement and learning when mechanics are explicitly mapped onto motivational and learning theories (supporting needs satisfaction, optimal challenge, collaboration, and mastery-oriented feedback) while avoiding overreliance on purely extrinsic, competitive rewards[8,9,10,14].

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Scientific Evidence

Documented Benefits of Gamification

Across multiple meta-analyses, gamification shows consistently positive, but context-dependent, effects in diverse settings.

In education, gamified instruction is generally associated with improved learning outcomes and academic achievement. This has been shown for children in primary and basic education[1,2,3], for school learners more broadly[4,5] and for students in higher or mixed-level settings[6,7,8]. Gamification is particularly effective when game elements are closely aligned with clear instructional goals rather than added superficially[6,8].

Gamification also tends to increase motivation, engagement and enjoyment. Meta-analyses on gamified learning report positive effects on motivational outcomes and student attitudes[6,7,8], indeed, a scientometric review of reviews and meta-analyses shows that motivation, engagement and learning are the dominant outcome clusters in gamification-in-education research[9]. In primary education specifically, recent documentary reviews highlight that gamification strategies and tools raise pupils' interest, make activities more enjoyable and support deeper learning, fostering social interaction and teamwork[10].

Taken together, these findings indicate that gamification is a promising approach that can improve learning, increase motivation and engagement, foster positive behaviors and social skills; and enhance users' attitudes toward digital systems, provided that game elements are carefully selected and aligned with meaningful learning objectives[6,7,8,9,11,12,13].

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Limitations and Risks

- Shift toward surface learning and uneven achievement: Gamification can bias effort toward practical / procedural tasks and points-earning, with weaker or even negative effects on written, conceptual, or reflective work. These risks favouring completion of gamified tasks over deeper understanding[1,2].

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- Undesired motivational effects of rewards and competition: Points, badges, and leaderboards can become controlling rewards that undermine autonomy and intrinsic motivation, leading over time to lower motivation, satisfaction, empowerment, and even exam performance, particularly when students were initially interested in the subject[2,3, 4, 5].

- Negative social dynamics and unequal appeal: Competitive rankings can discourage or alienate students who dislike competition, amplify social comparison and create a sense of unfairness. Only some profiles (e.g., highly competitive or already confident learners) tend to benefit, which risks widening disparities in engagement[1,2,3].

- Novelty and sustainability issues: Initial increases in enjoyment and participation often fade as the novelty dissapear; longitudinal evidence shows declining motivation in gamified groups, and prior work links many "success stories" to short-term novelty rather than stable pedagogical value[1,6].

- Implementation burden, technical friction and questionable signals of mastery: Gamified systems can impose substantial extra workload on instructors (manual checking of achievements, tuning mechanics) and are vulnerable to usability problems, slow platforms or cheating (e.g., submitting empty evidence), which can erode motivation and trust[1,4]. When points and badges conflate effort, persistence, attendance and mastery, they risk distorting assessment and giving students misleading indicators of their actual competence[3,4].

- Strong context dependence and limited transferability of common mechanics: Effects depend heavily on which mechanics are used (e.g., badges + leaderboards + competition), who the learners are and how participation is framed (mandatory vs. voluntary). Mechanics that work for bored or low-interest students can backfire for already motivated students, making "one-size-fits-all" gamified templates risky[1,2].

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- Superficial “gamification skins” and conceptual ambiguity: There is a persistent risk of “pointsification” (adding points, badges and leaderboards on top of traditional tasks without redesigning the underlying learning activities) leading to shallow engagement rather than meaningful learning[3,4,5].
- Confusion between gamification and game-based learning can also result in mismatched designs and unrealistic expectations about what simple reward structures can achieve[7,8,9,10,11]

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Best Practices in Gamification

Gamification has been widely implemented across educational contexts, both geographically and pedagogically. Previous research shows that its use is especially prominent in countries such as the United States, Spain, the United Kingdom and Germany; and is applied across a wide range of disciplines, with a particular focus on programming, language learning, engineering, and mathematics[1,2]. Most gamified experiences are developed in higher education, although primary education also represents a significant and growing field of application, especially in Europe and Latin America, with Spain standing out as one of the most active contexts[3]. In primary education, gamification is mainly implemented through digital approaches, frequently using commercial platforms and is commonly aimed at improving motivation, academic performance, and collaborative work[3,4].

Based on this broad and heterogeneous landscape, the best practices presented in this section (see table 2) have been selected for their representativeness, educational relevance and alignment with commonly identified objectives and contexts of gamification in formal education. Additionally, some practices were identified through Spain's National Institute for Educational Technologies and Teacher Training (INTEF)'s repository of inspiring educational practices, which curates documented innovation experiences in non-university education, including gamification initiatives:

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Table 2
Gamification initiatives from INTEF

Title	Curricular area	Location	Educational level/grade	Objective	Brief description	Link
Guayota. La Leyenda Continúa... (Guayota. The Legend Continues...)	Knowledge of the Environment	Santa Cruz de Tenerife, Spain	Early childhood education and care	To learn about the traditions, customs, and characteristics of the Autonomous Community of the Canary Islands. To capture the attention of the students and their families and get them excited about the project.	Gamified experience to learn about the traditions, customs and characteristics using apps such as *Genially*, *Google Site*, *Generador de QR*, *ChatterKid*, *YouTube*... The narrative centers around the legend of Guayota, a dragon that captures Magec, the sun god, and terrorizes the people who live on the island. The students have to find the gems that protect the islands. To do so, they need to solve activities and challenges set on each island and pass the final test. Each gem they obtain hides a letter that forms the secret word that will lead them to the ultimate battle on the island of La Graciosa. There, a final breakout-edu awaits them in order to defeat the dragon Guayota.	https://intef.es/experiencias_edu/guayota-la-leyenda-continua-educacion-infantil/
Un Mundo Mejor (A better World)	Interdisciplinary (Self-awareness and personal autonomy and Languages: Communication and representation)	Yecla, Murcia, Spain	Early childhood education and care	To raise awareness about the importance of recycling in everyday life. To learn about the consequences that climate change is having on the planet and, in particular, on endangered animals.	Gamification is based on project-based learning and service learning and educational technologies that deal with protecting the environment. Using Genially, Youtube, QR codes, Kahoot, students go on a mission to save the planet. The narrative centers around a box from NASA students find in the classroom together with moon dust. Inside there are QR codes of videos of astronauts giving students four challenges to solve: ranging from robotics, fighting a villain to the final gymkhana where students win badges and try to learn about recycling and protecting the environment.	https://intef.es/recursos-educativos/experiencias-educativas-inspiradoras/detalle-experiencias/?id=22191
RobotRetos (RobotChalleNges)	Mathematics	Riolobos (Cáceres), Spain (rural)	5th and 6th year of Primary education	To introduce computational thinking. Stimulate interest in STEM careers. Learn to work in teams, organize themselves, and reach agreements while respecting their classmates' contributions. Acquire basic technological concepts and basic aspects of programming languages.	Gamification using ClassDojo to teach mathematics by first building a robot and then programming the robot. Challenges are presented to the students through the Escholarium platform, which they will have to solve in order to complete the different phases of the project. At the end, they solved a final challenge, a space mission.	https://intef.es/recursos-educativos/experiencias-educativas-inspiradoras/detalle-experiencias/?id=23625
Emprendopoly	Natural Sciences and Social Sciences	Salamanca, Spain	6th year of Primary education	To design a business incubator To promote the SDGs	Using gamification, cooperative learning, visual thinking, and flipped classroom, students design a business incubator. Using Genially students have to solve different challenges such as conducting market research, creating lapbooks and posters, and for their final challenge they create their own companies: they choose the sector, suppliers, location, and create marketing and advertising while taking into account the Sustainable Development Goals (SDGs).	https://intef.es/recursos-educativos/experiencias-educativas-inspiradoras/detalle-experiencias/?id=32511
La isla de los números (The Island of the numbers)	Mathematics	Valdepeñas, Spain	1st year of compulsory secondary education	To generate a positive feeling towards Mathematics. To familiarize students with the use of ICT (Office 365, Genially, Teams, Edpuzzle, Quizizz, iMovie, Keynote, Forms, OneNote, etc.). To help students achieve the course objectives by respecting their individual learning pace.	Gamified journey through the whole maths syllabus using a narrative island, flipped classroom videos, interactive map and challenges. It mixes simple digital resources and classroom work, allowing adaptation in schools with uneven device access. The narrative centers around the disappearance of one character named Dr. Jones. Traveling across the island of numbers, students have to solve challenges that will lead them to Dr. Jones. Students earn virtual coins as they complete activities, tests, written exams, challenges, oral explanations, participation, notebook entries, etc. The coins can be exchanged for reward cards that can be used throughout the course. At the end of each topic, a challenge is proposed where students review the material. At the end of each term, a Breakout-Edu activity is held to review what has been learned.	https://intef.es/experiencias_edu/la-isla-de-los-numeros/
Viaje a Marte (Trip to Mars)	Scientific Culture	La Roca de la Sierra (Badajoz), Spain	4th year of Compulsory secondary education	To improve motivation towards learning science in general	Gamification journey to learn about the subject subject of Scientific Culture using Google Drive, Genialy, Canva, Powtonn, Kahoot, Quizziz, Twitter, Feedly, and Flippity. The narrative centers around students as future scientists who must learn a great deal about science on Earth in order to travel and reach the red planet. Students, using pseudonyms, work on challenges that can be of various types and content (the universe, healthy living, the environment, new materials, etc.). They respond to these challenges in portfolios or personal blogs, and they earn points and badges.	https://intef.es/recursos-educativos/experiencias-educativas-inspiradoras/detalle-experiencias/?id=28623
Creación de un centro comercial (Creating a Shopping Center)	Interdisciplinary	Vila-real (Castellón), Spain	Vocational training	To consolidate student learning To innovate teaching and learning by applying active methodologies	Gamification is based on cooperative learning, PBL and collaborative learning in order to create a shopping center, applying the knowledge that students acquired during the course. Using Genially, PowToon, Google Drive, social networks, and collaborating with various stakeholders (students from all grades, teachers, families, authorities, the press, and members of local trade associations such as Vila-real Trade Union UCOVI, Fundación Globalis) students complete different tasks that lead to the creation of a shopping center that they present at the end.	https://intef.es/recursos-educativos/experiencias-educativas-inspiradoras/detalle-experiencias/?id=32776
Olimpiadas de empleabilidad (Employability Olympics)		Ontinyent (Valencia), Spain	Vocational training	To foster relationships between the different educational cycles in the town's schools, To improve students' social skills, professional networking, and, ultimately, their employability.	Gamified experience based on cooperative learning aims to improve career guidance and job search process by working on networking, CV writing, job interviews, and personal branding. The project consists of several tests (breakout edu, networking, personal branding, video CV, selection interview, etc.) with teams of vocational training students from different educational centers, both intermediate and advanced, over the course of a full school day, during which their performance is evaluated and they win prizes.	https://intef.es/recursos-educativos/experiencias-educativas-inspiradoras/detalle-experiencias/?id=30784

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While the practices presented in Table 2 are drawn primarily from the INTEF repository of inspiring educational practices in Spain, the scope of the following section is intentionally extended beyond the national context. To provide a broader and more diverse perspective on best practices in gamification, additional projects developed in other European countries have also been included. These initiatives, many of them supported by Erasmus+ programmes, illustrate how gamification and game-based approaches are applied across different educational levels and sociocultural contexts, addressing themes such as gender equality, inclusion, intercultural education and student engagement. Together, the INTEF examples and the selected international projects offer a representative overview of how gamification is being used as a pedagogical strategy to promote motivation, participation, and social learning in formal education:

Play 4 Your Rights

Play 4 Your Rights is an Erasmus project to fight sexism including sexist hate speech, gender stereotypes and gender discrimination among adolescents through games and gamification and social media education strategies. It involved six different partners in four European countries in the field of women's rights and media education. As part of the project, two games were produced by experts together with students and tested in schools. The first of these is the "Strategic reaction" game, a card game in which you win by finding positive solutions to hate speech. The second of these is an "Urban game", a game that starts with a story of a character, much like in videogames, in which you advance through the game with different difficulties and a mission to fulfil[5]

KidLe

KidLe – Developing an Intercultural Game as a Pedagogic Tool for the Inclusion of Pupils with Migrant Background in New Learning Environments, aims to develop intercultural games for students in pre-school and primary education based on play methodology. Through the co-creation method, children, parents and teachers work together to develop intercultural board games in order to promote inclusion through play by supporting the transition of migrant children to new school environments and empowering both parents and teachers to integrate play as a way of communication and learning with children. The project, co-funded by the European Union and the ERASMUS+ programme, involves 6 European partners.

KidLeEU has a dual format:

- Digital games, accessible online, designed to engage children and educators through interactive tools.
- In-person board games, encouraging direct interaction, teamwork, and cultural exchange in classrooms and community spaces.

Monster Qui: The Board Game

The Board Game is a game that combines the use of the SMART Notebook application with a large 3x2-meter game board. The game moves continuously between the board and the digital whiteboard, maintaining students' attention and motivation while they work on the content and knowledge of the subject area being studied. The game is designed to be used in all subjects, either individually or in groups, with a maximum of 6 individual players or 6 groups. In order to start the game students have to do some preliminary work- create questions that will later be used to try to defeat their opponents in the game. The objective of the participants is to collect all the monster cards that appear in the game. To do this, each time a participant lands on the “Monster” square, a game begins on the Monster Quiz digital board, and the participant who wins the quiz gets the monster card that appears on that square. Students also compete against each other in quizzes to win monster eggs, which they will then use in the game.

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Practical Design Framework for Educational Gamification

This section adopts the theory-driven gamification design model (GAFCC) proposed by Huang and Hew (2018) as its guiding framework. The GAFCC model is grounded in well-established learning and motivation theories, particularly Self-Determination Theory, Goal-Setting Theory and Flow Theory and provides a structured approach for aligning gamification elements with instructional goals and learners' psychological needs. Basing the practical design process on this validated model helps ensure that gamification functions as a pedagogically sound strategy to enhance engagement and learning, rather than as a superficial layer of rewards.

The model is based on 5 elements (Figure 2): goal, access, challenges, collaboration and feedback:

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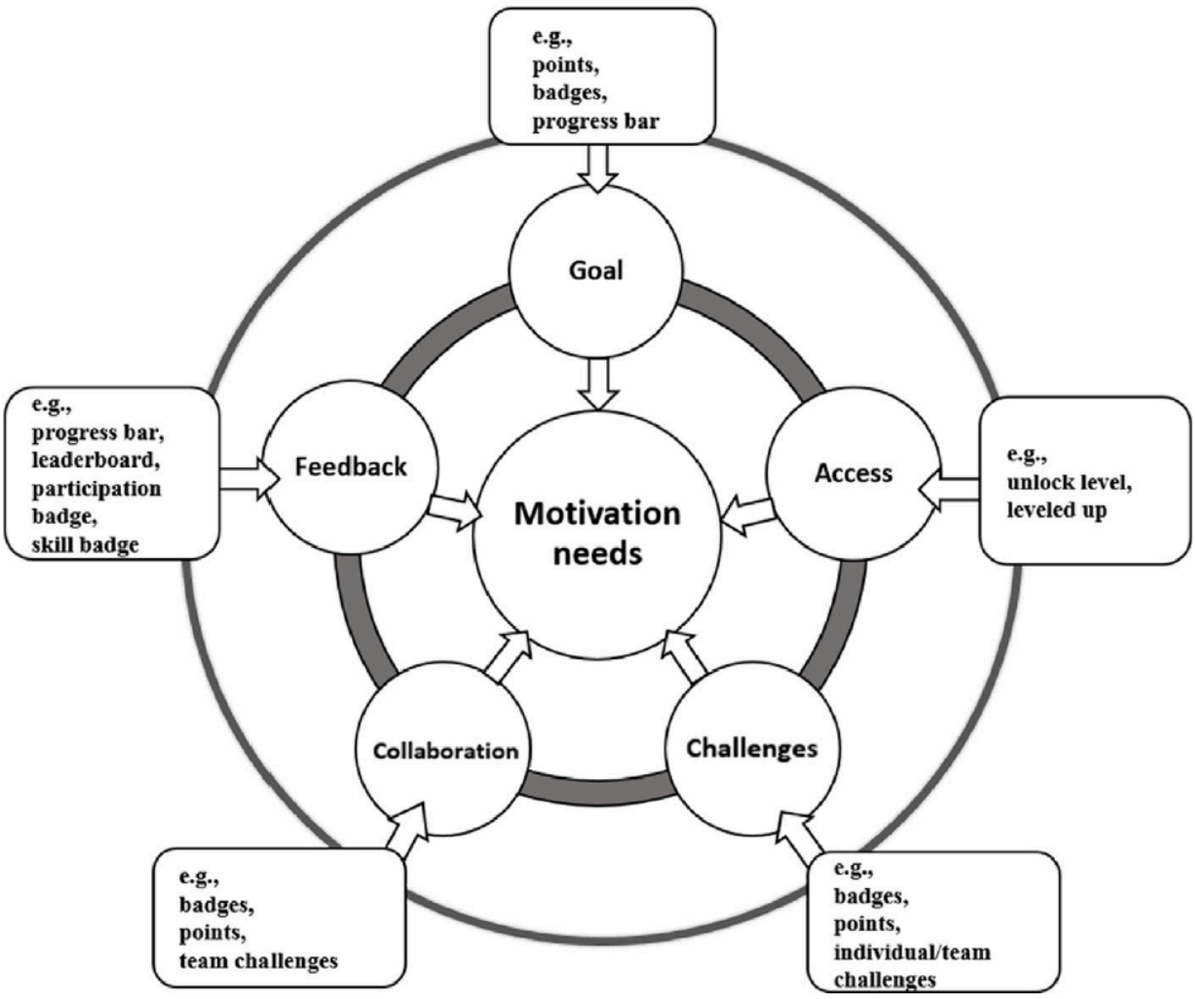
Figure 2



In order to implement it in education, they propose a five-stage gamification design procedure (Figure 3):

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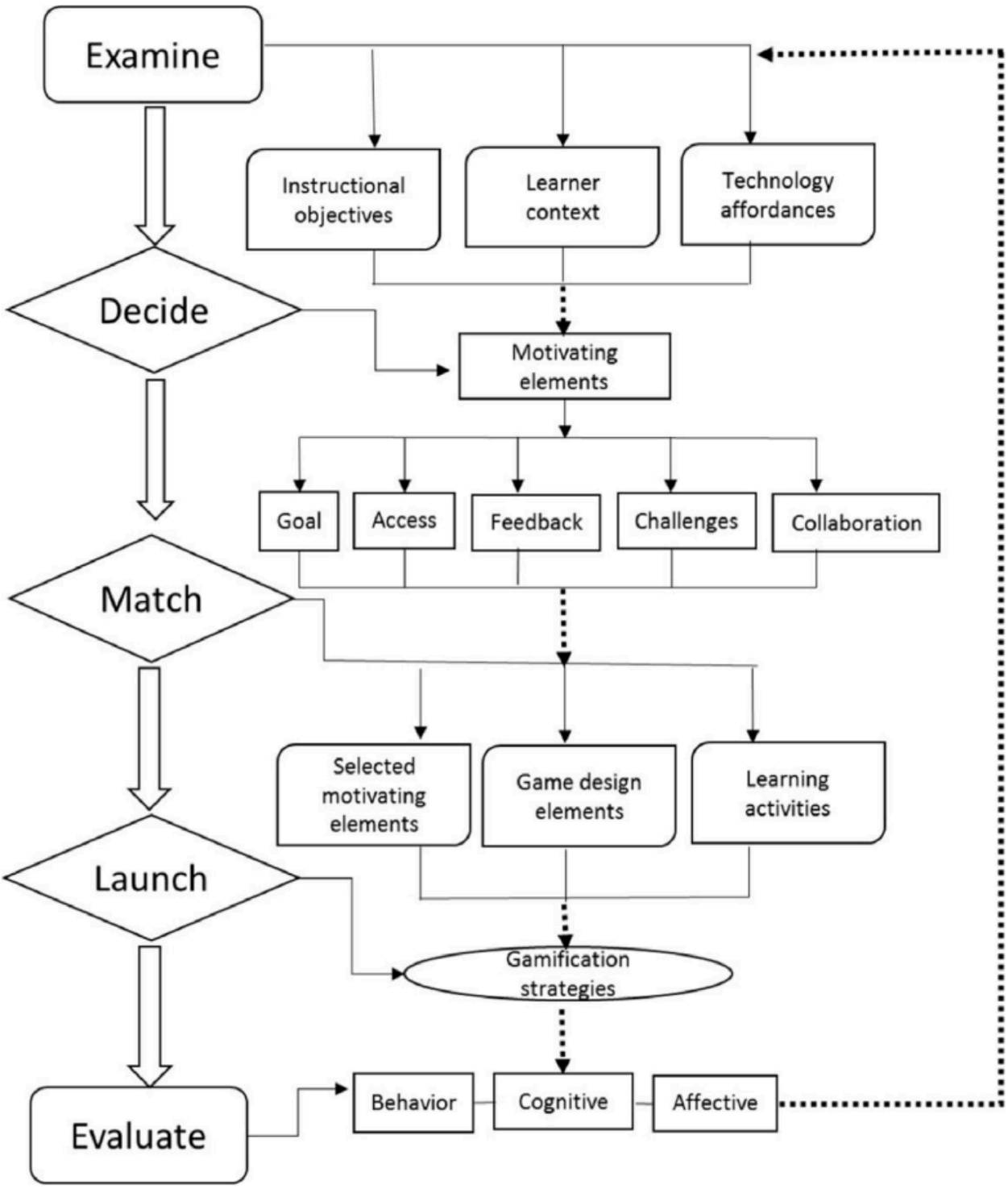
Figure 3



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Step 1. Define learning goals and target behaviors (Goal-setting focus)

The design process starts with clear learning objectives and desired learning behaviors, rather than with game elements. Gamification should be driven by instructional goals and goal-setting principles, ensuring that students understand what they are expected to achieve and why. Gamified course design should start from instructional goals rather than from game mechanics themselves, ensuring that game elements are selected only when they meaningfully support learning outcomes[1,2].

At this stage, designers identify:

- The learning outcomes for each unit or module
- The behaviors that support learning, such as regular practice, persistence, engagement with materials or collaboration

What to prepare in the platform:

- A clearly articulated list of learning outcomes per module
- Explicit alignment between outcomes and assessment evidence (quizzes, projects, discussions, artifacts)
- Setup of the visual tracking system (e.g., progress bars or completion checkboxes) that will show students their baseline and their path toward the first milestone.

Step 2. Structure the course as a progressive learning path (Competence and flow)

The GAFCC model highlights the importance of progressive challenge to support students' sense of competence and flow. Structuring content into a cycle of topic → challenge → achievement supports competence development and mirrors effective game progression systems. Hierarchical structures with sequential unlocking help learners build skills incrementally, maintaining engagement by matching challenges to current ability[3]. This is operationalized by:

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- **The Core Loop:** Maintaining a stable cycle of goal → action → feedback → progress to support long-term engagement.
- **Modular Levels:** Organizing the course into stages where each activity builds on previous knowledge.
- **Narrative Coherence:** Using light thematic framing as a coherence device rather than the primary motivator.

To ensure an inclusive experience, the framework prioritizes cooperative structures, such as shared missions, collective checkpoints, and group products, over individual competition. Research indicates that while collaboration fosters meaningful learning, excessive competition can undermine participation for many students[2,3]. Thus, if leaderboards are implemented, using anonymized or team-based formats reduces social pressure and the risk of exclusion[4]. Periodic group goals can refresh motivation without the need for complex new mechanics. In this line, defining simple, rotating roles (e.g., coordinator, explainer, quality checker) distributes responsibility and makes contribution visible. Gamified systems that recognize diverse forms of participation, such as explaining concepts or supporting peers, promote meaningful social roles rather than narrow point accumulation[3,4].

Finally, gamification is front-loaded design work. Keeping rules simple, using stable templates and explaining mechanics clearly reduces confusion and supports long-term sustainability[1]. Consistency across cohorts helps maintain engagement without increasing instructional workload.

What to prepare in the platform:

- Visible progression indicators (e.g., completion tracking or progress bars) that make advancement explicit
- Completion tracking, progress bars or maps that make advancement explicit and support the sense of competence.
- Pre-configured group areas or "Shared Mission" folders to facilitate collective checkpoints and group products.
- A dedicated "Game Manual" or "How to Play" section with clear, stable instructions to reduce confusion and ensure sustainability.
- Configuration of leaderboards or progress charts at the team level (or using aliases) to foster a safe, inclusive environment.

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Step 3. Design meaningful tasks as “quests” that support autonomy and safe failure

Gamification should support autonomy by offering learners choice in how they achieve learning objectives. Rather than a single mandatory task, students can be offered alternative activities that demonstrate the same learning outcome.

Mapping each outcome to a lean and coherent set of progression instruments is important. Use a small, intentional set of elements that clearly signal progress. A practical structure is quests or challenges as proximal goals, levels as milestones and badges or achievements as evidence of mastery, with points or experience used mainly as immediate feedback. Research warns against overloading courses with too many mechanics, as excessive complexity can distract from learning and create cognitive overload[2,4]. Selecting only the dynamics and mechanics that directly serve instructional goals improves coherence and sustainability.

In addition, the model stresses the importance of safe failure, consistent with flow theory. Allowing retries, revisions, or resubmissions encourages experimentation and learning from feedback, instead of penalizing initial failure. Providing alternative quests or pathways that assess the same learning outcome through different formats increases learner autonomy and engagement. Structured choice allows students to demonstrate mastery in ways aligned with their strengths while still meeting shared objectives[1]. Tiered difficulty levels further support self-regulation and sustained motivation[2].

What to prepare in the platform:

- A folder or section containing both "Core Quests" (mandatory) and "Optional Side-Quests" (alternative paths) that target the same learning outcomes.
- Quizzes and assignments configured with multiple attempts, allowing students to resubmit or retry based on feedback without permanent penalty

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- Clear evaluation criteria for each quest so students can self-assess and choose the path that best matches their strengths.
- A minimal set of visual badges or "Experience Points" (XP) configured to act as immediate progress signals rather than high-stakes grades.
- Task labels or tags (e.g., "Beginner," "Intermediate," "Advanced") that allow students to self-regulate their learning flow and challenge level.
- ·Support-Based "Powers" or Perks: special unlockable abilities that students can use to overcome difficulties, such as "Teacher's Aid" (requesting a hint), "Shield" (protecting a teammate's progress) or "Double-Up" (boosting points for specific challenges), fostering both peer collaboration and resilience.

Step 4. Apply gamification mechanics that reinforce motivation (Autonomy, competence, relatedness)

Game elements such as points, badges and unlocks are treated as motivational affordances, not as ends in themselves. Gamification elements are selected only if they strengthen motivation and engagement through autonomy, competence and relatedness, aligning with research on motivation and gameful learning design[3]. Make success criteria visible so students always know what counts and what comes next; clear goals and transparent progress indicators support learner self-regulation and reduce anxiety around grading[1].

Points should function primarily as informational feedback rather than as the main goal of participation. Emphasizing badges that represent competence and meaningful narrative milestones supports mastery-oriented motivation and reduces overreliance on extrinsic rewards[2,4]. So, these elements should be carefully selected to support psychological needs:

- Points can signal progress and effort
- Badges can represent meaningful achievements or competence milestones
- Unlocks can scaffold learning by controlling access to advanced content after prerequisite mastery

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Overuse or purely decorative rewards are discouraged, as they may undermine intrinsic motivation.

What to prepare in the platform:

- A gradebook or point system configured as additive (starting from zero and growing) rather than subtractive (losing points from 100). This reinforces a growth mindset and signals effort.
- A set of digital badges with "Evidence Requirements" clearly defined in the description. Each badge should represent a specific skill or milestone, not just participation.
- Configuration of "Conditional Access" rules based on mastery (e.g., Student must achieve 80% in Quiz A to unlock Advanced Quest B) to ensure logical scaffolding.
- A "Rules of the Game" page or block where students can see exactly how points are earned and what badges are available, reducing grading-related anxiety.
- Pre-written feedback messages that accompany unlocks or badges, emphasizing the competence gained rather than just the prize.

Step 5. Ensure continuous feedback and visibility of progress (Feedback and goal monitoring)

The GAFCC model emphasizes that learners must always be able to monitor their progress toward goals. Frequent, specific and improvement-oriented feedback is a core feature of effective gameful learning environments. Allowing multiple attempts and recovery from failure encourages persistence and mastery rather than performance anxiety[1,2]. Immediate and informative feedback is consistently identified as a key advantage of gamified learning systems[3].

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Feedback can be automated (e.g., quizzes) or instructor-provided, but it should be timely and clearly connected to learning goals. When learners understand what they have achieved and what remains to be done, motivation and engagement are more likely to be sustained. Points, badges and levels must be directly tied to evidence of learning, not to superficial behaviors such as task completion alone. Misaligned reward systems can incentivize quantity over quality and weaken assessment validity[4]. Requiring mastery thresholds or reflective checkpoints helps ensure that game metrics reflect genuine learning outcomes[1].

What to prepare in the platform:

- A visual overview (e.g., completion tracking or progress bars) that allows students to monitor their journey toward goals and self-regulate their effort.
- Quizzes and interactive tasks configured to provide immediate explanations for both correct and incorrect answers, turning "failure" into a learning opportunity.
- Configuration of mastery thresholds (e.g., a minimum score of 80% required to pass) to ensure that points and levels reflect genuine learning rather than mere task completion.
- A digital portfolio or "Achievement Log" where badges and points are explicitly linked to the specific evidence (quizzes, projects, or reflections) that earned them.
- A clear, accessible infographic or "How to Progress" page that explains the relationship between learning effort, mastery thresholds, and advancement within the course structure.

*Inclusion of Special Educational Needs (SEN)

Inclusive gamification must ensure meaningful participation for all learners. Providing multiple modes of participation, clear visual scaffolds, simple language and peer support aligns with inclusive and student-centered gamified design principles[5].

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When designing games, Heron et al. (2018) suggest paying attention to several different dimensions of accessibility: Visual Accessibility, Physical Accessibility, Cognitive Accessibility, Emotional Accessibility, Socioeconomic Accessibility, Communicative accessibility and Intersectional Accessibility[6]. For online games and platforms, several critical design considerations must be addressed:

- Contrast: Ensure effective contrast in all elements in the game (a minimum colour ratio of 4.5:1 for normal sized text and 3:1 for text of font size 14 or higher (use tools such as Adobe Color: https://color.adobe.com/es/create/color-contrast-analyzer)
- Font choice: Fonts should ideally be chosen for readability, with a minimum of ornamentation (for example, Arial is a good option)
- Choice of colours: Make sure color palettes are accessible for persons impacted by colour-blindness (Use tools such as Adobe Color Accessibility Color Blindness: https://color.adobe.com/es/create/color-accessibility)
- Complexity: Avoid complex games and limit the need for significant burden on memory. Avoid multitasking or the need to keep track of many competing goals and systems. Avoid complex scoring systems
- Reading level required: Avoid large amount of text or complex instructions
- Aesthetics: Keep aesthetics simple to avoid making instructions and outcomes difficult to read.
- Inclusive artwork: Pay attention to diversity (for example, gender balance, ethnicities, disability)
- Sexism in art and instructions: Avoid stereotypes and gendered and heteronormative assumptions
- Themes and interaction: Avoids themes that are upsetting or triggering. Avoid games that allow player elimination or ganging up on a single player. Avoid lying/bluffing.
- Challenge: To avoid frustration, make sure the challenge of a game is not too high

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- Time constraints: Time constraints should be flexible or avoided so as not to create frustration or stress
- Length of game sessions: The longer a game is, the more likely it is to result in physical, emotional, or cognitive discomfort
- Audibility: If incorporating audio components, provide alternative ways to convey that information for those with hearing impairments.

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Conclusions and Recomendations

This report positions gamification as the purposeful integration of game design elements and gameful experiences into non-game learning processes, clearly distinguished from game-based learning, where a complete game is the primary instructional medium. Across the reviewed evidence, gamification tends to show positive but context-dependent effects on motivation, engagement, enjoyment, participation and, when aligned with instructional goals, learning outcomes, including in primary education.

Crucially, the literature also highlights recurring risks: “pointsification” (superficial rewards without redesigning learning), over-competition (negative social comparison, exclusion), novelty fade, and validity issues when points/badges measure completion rather than mastery. Effective educational gamification therefore depends less on isolated mechanics and more on the alignment of design choices with learning and motivation theories, notably Self-Determination Theory (autonomy, competence, relatedness), Flow (optimal challenge and feedback) and goal-setting/self-efficacy (clear, attainable goals and progress visibility).

For bridging rural–urban learning experiences, the strongest implication is that gamification can act as a shared pedagogical structure: common missions, collaborative quests and comparable progression pathways that make learning experiences more equitable across contexts, the platform supports accessibility, low-bandwidth participation, teacher workload reduction, and designs that value collaboration and mastery over competitive ranking.

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Pedagogical recommendations

- Start from learning outcomes and map them to a lean progression system (quests → milestones/levels → mastery badges), avoiding gamification "skins."
- Design for collaboration first (team quests, shared checkpoints, peer feedback), adding competition lightly (prefer team-based or anonymized formats).
- Build structured choice (multiple quest formats for the same outcome) to support autonomy and inclusion, especially for diverse learners.
- Use safe-failure loops (retries, revision, recovery paths) supported by timely formative feedback to strengthen competence and persistence.
- Protect assessment validity: ensure points/badges reflect evidence of learning (rubrics, mastery thresholds, reflective checkpoints), not mere activity volume.
- Plan for sustainability beyond novelty: keep a stable core loop (goal → action → feedback → progress) and refresh motivation through periodic collaborative milestones rather than constant new mechanics.
- Design explicitly for SEN: multiple ways to participate, simplified language, visual scaffolds, predictable rules, and peer-support structures.

Directions for platform development

Below is a platform-oriented checklist aligned with the report's evidence, risks and the GAFCC (Goal–Access–Challenge–Collaboration–Feedback) design logic.

A) Core platform architecture (teacher-facing)

- Learning-goal builder: define outcomes + target behaviors first; link each to assessment evidence.
- Gamified pathway templates (primary-ready): quests, levels, milestones, badges, powers, feedback loops; editable and reusable.

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- Quest authoring with structured choice: create alternative tasks that evidence the same outcome (e.g., oral / visual / written / hands-on).
- Rubrics or grids + mastery thresholds attached to quests/badges to protect assessment validity.
- Safe-failure settings: retries, resubmissions, revision cycles, optional recovery quests.

B) Motivation + learning design (avoid "pointsification")

- Meaningful progression indicators (progress bars, completion maps, "next steps") tied to outcomes.
- Badges as mastery signals (competence milestones), not decorative rewards.
- Points/XP as informational feedback (transparent rules), with options to de-emphasize or disable Play-Based-Learning elements.
- Balanced dynamics toolkit: cooperation-first mechanics by default; competition as an optional layer with guardrails.
- Novelty without complexity: "seasonal events" / collaborative milestones that refresh engagement without redesigning everything.

C) Collaboration and rural–urban connectivity

- Inter-school collaboration mode: pair or network rural–urban classrooms in shared missions.
- Asynchronous collaboration tools (low-bandwidth friendly): shared artifacts, message boards, teacher-moderated exchanges.
- Shared quest library enabling "same mission, local adaptation" (common outcomes with contextualized tasks).
- Team structures with rotating roles (coordinator, explainer, checker, supporter) and recognition for prosocial contributions.
- Teacher partnership workspace: co-design quests, align calendars, agree assessment criteria, share reflections.

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D) Accessibility and inclusion

- Ensure the platform follows Universal Design for Learning practices by providing multiple means of engagement, representation and expression to accommodate diverse learner needs.
- Multiple representation modes (text + audio + visuals), adjustable reading level, clear iconography.
- Support diverse ways to demonstrate mastery through flexible formats (voice notes, photos, short videos, drawings) and the submission of learning artefacts (physical models, prototypes, digital builds or process drafts).
- Predictable rule display: “How to play / How to progress” always visible and simple.
- Personalization options: pace adjustments, differentiated challenge tiers, scaffold toggles.
- Equity safeguards: discourage public individual ranking by default; use team/anonymized leaderboards if enabled.

E) Feedback, analytics, and teacher workload reduction

- Fast feedback features: auto-feedback quizzes + quick comment banks + checkpoint prompts.
- Progress dashboards for teachers and learners (by outcome, not only by points).
- Anti-cheating / evidence quality checks (light-touch): required rubric evidence, reflection prompts for key badges.
- Workload-aware automation: auto-awarding rules when mastery evidence is met; batch approvals for submissions.
- Implementation support: onboarding guides, example pathways, “first 2 weeks” starter kit and classroom scripts.

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Applying Gamification in Classroom settings

Weplay Erasmus + project