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In-service teachers' gameful practices

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Abstract

Purpose – This study aims to validate a typology of factors previously established by the authors that influence teachers' gameful practices and to investigate these factors further qualitatively.

Design/methodology/approach – A focus group interview was conducted with four experienced teachers to gather their views on gameful education. The interview also included a metaphor analysis focusing on their beliefs about the compatibility of school learning and gamefulness. The data were coded using a deductive approach, and qualitative thematic analysis was employed.

Findings – Individual factors are more positive influences on gameful practices than institutional or system-level factors. Teachers stated that digital equipment is not essential for gameful practices, but governmental support in reshaping exam-centric education systems might be a key step in promoting their adoption.

Practical implications – In the 21st century, students' learning needs differ from past generations, creating challenging situations for teachers in exam-centric cultures. Gameful education could help teachers by introducing an engaging and motivating learning environment for students. This paper aims to help teachers implement and decision-makers support innovative practices that target lifelong learning.

Originality/value – The empirical findings validated the previously established typology of factors. This research presents best practices for teachers in implementing gameful methods and highlights hindering factors for school leaders and decision-makers aiming to support gameful practices.

Keywords Gameful education, Gamification, Game-based learning, Practising teachers, Teachers' beliefs, Teachers' attitudes

Paper type Research paper

1. Introduction

In the 21st century, students have different learning needs compared to previous generations, presenting challenges for teachers in public education as they adapt their everyday practices (Prensky, 2001). Education systems worldwide often revolve around exam-centric cultures, which significantly shape teachers' perspectives on teaching and learning (Luo *et al.*, 2021; Yong *et al.*, 2019, 2021). Unfortunately, this emphasis often leads many students to lose their internal motivation during their schooling, ultimately resulting in declining academic performance and a negative attitude towards learning (Paksi *et al.*, 2023). This hinders the development of lifelong learning concepts. However, if appropriately implemented, gameful methods can create enjoyable and immersive learning environments while improving academic achievement (Al-Azawi *et al.*, 2016; Hromek and Roffey, 2009; Kapp, 2012).

Teachers' perceptions of formal learning and gamefulness may be incompatible; thus, investigating these concepts through teachers' views becomes crucial for successfully

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implementing gameful educational methods (Luo *et al.*, 2021; Yong *et al.*, 2019, 2021). A prevalent misconception among teachers is that play undermines the seriousness required for learning within public schools (Luo *et al.*, 2021). Despite positive attitudes toward gameful learning in previous research, teachers often refrain from incorporating these methods into their practices (Bourgonjon *et al.*, 2013), primarily due to external factors such as inadequate support from educational systems (Bacsa-Károlyi and Fehérvári, 2024).

The effective adoption of gameful education significantly depends on teachers' beliefs regarding its efficacy and their prior experiences (Beavis *et al.*, 2014; Hsu *et al.*, 2017; Rowan, 2016). Thus, thoroughly investigating the factors that influence practising teachers' beliefs about gameful education and its feasibility is a fundamental step towards integrating gameful activities more deeply into educational practices.

2. Review of literature

2.1 The concept of gameful learning

Terms associated with gameful learning (e.g. game, gamification, game-based learning, gameful education) lack a unified theoretical foundation in the literature (Bacsa-Károlyi and Fehérvári, 2024; Opris *et al.*, 2021; Zainuddin *et al.*, 2020). Due to this lack of a general understanding, in-service teachers often confuse these terms too (e.g. gamification and game-based learning) (Opris *et al.*, 2021; Zainuddin *et al.*, 2020). In this research paper, the term "game" refers to a more structured form of play characterised by rules, competition, and tangible objectives (Deterding *et al.*, 2011). This definition of "game" aligns better with the context of public education than "play" and facilitates the achievement of specific learning goals.

There are various definitions of gamification (Kapp, 2012; Lee and Hammer, 2011; Werbach and Hunter, 2012) and game-based learning (Gee, 2007; Lameras *et al.*, 2020; Van Eck, 2006). Most commonly "gamification" is referred to as "the use of game design elements in non-game contexts" (Deterding *et al.*, 2011, p. 2) and "game-based learning" refers to the process of learning through a game, which can be synonymous with "serious game" or its utilisation in the learning process (Opris *et al.*, 2021). In this research, "gameful learning" is an umbrella term encompassing the use of games or gamification in the learning process. Therefore, the term "gameful education" is used to describe the implementation of gameful learning in the public educational context.

Within the game-based learning framework, there is also the concept of digital game-based learning (DGBL), which involves using digital games in the learning process (Leonardou *et al.*, 2021). However, it is essential to note that in many research papers, gamification and game-based learning are predominantly explored from a digital perspective (Sun *et al.*, 2023). This digital-centric approach can pose challenges to implementing these methods in public education due to potential issues related to technology use, including insufficient digital skills and knowledge among teachers, inadequate equipment, and lack of support (Bacsa-Károlyi and Fehérvári, 2024).

2.2 Gameful learning in the public educational context

Numerous studies acknowledge the benefits of educational games and the integration of gamification within the school environment. The most notable distinctions between traditional school-based learning and learning through games lie in the delay of rewards, challenges in sustaining attention, slowness, lack of challenges, and the oversight of individual learning paces (Kapp, 2012). These aspects often suggest that gameful learning is more enjoyable and engaging for students compared to traditional school-based learning (Kapp, 2012).

Gameful education lacks the boring and obligatory nature of traditional learning and is a fundamental motivator for students (Kapp, 2012; Mazarakis, 2021). A thoughtfully chosen and implemented method enhances students' competencies, problem-solving skills,

creativity, cognitive abilities, and academic achievements whilst offering student-centred learning experiences (Al-Azawi *et al.*, 2016; Hromek and Roffey, 2009; Manojlovic, 2022). As schools increasingly prioritise active learning, experimentation, and competence-based development, gamification emerges as a powerful tool (Kapp, 2012; Manojlovic, 2022). However, the success of these implementations highly depends on users, their capabilities, and the contextual framework (Kapp, 2012).

2.3 Factors that influence teachers' views about gameful learning

Teachers' attitudes and beliefs impact the implementation and success of gameful methods (Beavis *et al.*, 2014; Hsu *et al.*, 2017; Rowan, 2016). Attitudes are responses to previous stimuli that a person either rejects or favours (Kelly *et al.*, 2022) and have affective, behavioural, and cognitive components. The affective component relates to feelings, the behavioural component manifests in actions and intentions, and the cognitive component is based on beliefs and thoughts (Kelly *et al.*, 2022). Beliefs are "subjective claims the individual accepts as being true" (Buehl and Beck, 2014, p. 67) and have a direct impact on teachers' practices and decision-making processes (Batlle and González, 2023).

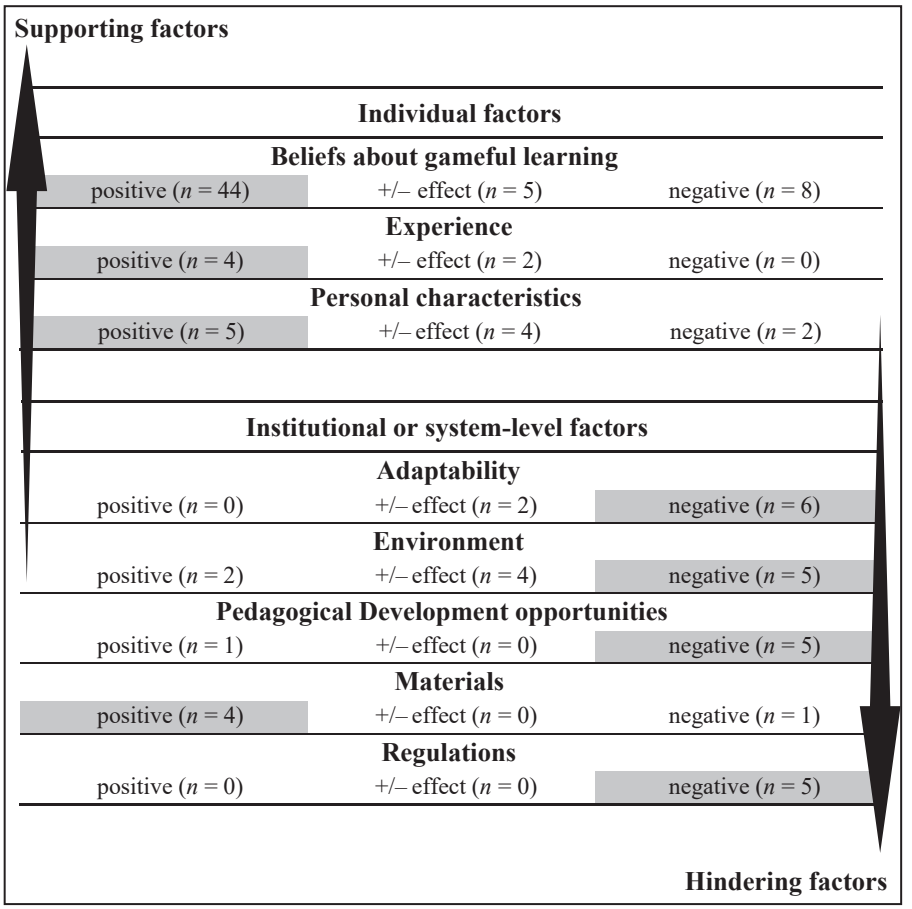
Based on social-cognitive theory, beliefs and behaviours are closely connected (Annetta *et al.*, 2013; Buehl and Beck, 2014). Teachers' attitudes and beliefs influence gameful practices and, consequently, the characteristics of gameful education and students' learning opportunities (Kelly *et al.*, 2022). The implementation of gameful practices heavily relies on teachers' beliefs about games and their perceived effects in educational settings (Beavis *et al.*, 2014; Hsu *et al.*, 2017; Rowan, 2016). The attitudes and beliefs of teachers can directly impact the success or failure of these methods (Beavis *et al.*, 2014). Improper application can lead to unintended consequences such as ineffectiveness, performance deterioration, undesired behaviours (e.g. excessive competition), and reduced efficiency (e.g. gradual loss of motivation) (Beavis *et al.*, 2014; Kapp, 2012).

Metaphor analysis is an effective tool for examining teachers' perspectives on specific concepts, as metaphors often reveal individuals' internal emotions, thoughts, perceptions, and reasoning through figurative expressions (Yildiz and Karadeniz, 2018). Previous studies have employed metaphor analysis to explore the perceptions of both students and teachers in game-related contexts (Yildiz and Karadeniz, 2018). However, they have not investigated the relationship between school learning and gamefulness.

Several factors influence teachers' gameful practices, such as their beliefs and acceptance towards gameful methods, game-based teaching experiences, professional development opportunities, and perceived barriers to implementation (Leonardou *et al.*, 2021; Yang, 2021). In a systematic scoping review (Bacsa-Károlyi and Fehérvári, 2024), the authors outlined a typology of factors influencing teachers' gameful practices. Following the PRISMA protocol, 143 studies published between 2013 and 2023 in English that contained empirical evidence that targeted in-service teachers' views on gameful education were synthesised. The review highlights the lack of a unified theoretical framework for the research field and the excessive focus on digital game-based learning instead of gamification and non-digital approaches. This work also identifies two major categories: "individual" and "institutional or system-level" factors (see Figure 1 in the findings section of this paper). The group of individual factors encompasses beliefs about gameful learning, experience, and personal characteristics, which predominantly act as supportive factors. Conversely, institutional or system-level factors that include adaptability, environment, pedagogical development opportunities, materials, and regulations often serve as hindering factors primarily due to inadequate support and facilities.

3. Purpose of the research

This study aims to validate the previously established typology of factors influencing teachers' gameful practices and qualitatively investigates these factors through teachers'



Source(s): Based on Bacsa-Károlyi and Fehérvári, 2024

Figure 1.
Typology of influencing factors regarding teachers' gameful practices

best practices by conducting a focus group interview with in-service teachers who actively integrate gameful methods into their teaching.

The research seeks to address the following questions.

RQ1. What do in-service teachers think about the compatibility of school learning and playfulness?

RQ2. What are the understandings of in-service teachers of terms related to gameful education?

RQ3. What factors influence in-service teachers' gameful practices?

4. Methods

4.1 Sample

Criterion sampling was employed to ensure a focus group interview with in-service teachers who have prior experience with gameful techniques and have incorporated these methods

into their teaching practices (cf. Kula, 2021). The teachers are involved in an international project focusing on story-based educational robotics interventions for 5th- and 6th-grade classes. Inclusion criteria include having prior experience with gameful education (assured by their involvement in the project) and being currently employed as teachers during the data collection period (also guaranteed by their participation in the previously mentioned project).

4.2 Participants

The educational robotics project spans three years and represents an international collaboration between the project coordinator (a nonprofit corporation), and five schools across multiple countries: one in Hungary, one in Romania, one in Austria, and two in Turkey. Most of these schools are public institutions, except for the two in Turkey. The focus group interview was integrated into one of the project's regular meetings and involved four teachers (all female) who attended the session. The atmosphere was calm and inclusive, as the teachers were already familiar with each other.

The participating teachers mainly taught primary school children. One teacher had extensive gaming experience, while the others had little to none. However, all the teachers had considerable experience playing and employing gameful teaching methods. For detailed background information of the participants, see Table 1.

4.3 Instruments

The focus group interview consisted of two parts. Initially, the teachers completed a background questionnaire, which took approximately 20 min. The first section of the questionnaire asked teachers to create metaphors such as "School is like _____, because _____." These metaphors were used to explore the teachers' perceptions regarding the compatibility of learning within a school environment and the act of playing (Baydar Arican, 2021; Yildiz and Karadeniz, 2018). Each metaphor sentence included a "subject of metaphor", a "source of metaphor" addressed by the word "like", and the rationale for the metaphor indicated by "because" (Yildiz and Karadeniz, 2018).

Background	Information
Nationality	Hungarian (n = 3): Two teachers practising in Romania, and one teacher practising in Austria Iranian-Turkish (n = 1) practising in Turkey
Teaching experience	30+ years (n = 2) 20+ years (n = 1) 10+ years (n = 1)
Subjects	primary school subjects (n = 4) (except P.E. (n = 2)); English (n = 1); Turkish (n = 1); German (n = 1); natural sciences and maths in secondary school and above (n = 1); computer sciences for adults (n = 1)
Gaming experience (5 point Likert scale 1 = none; 5 = a lot)	1 (n = 2) 2 (n = 1) 5 (n = 1)
Playing experience (5 point Likert scale 1 = none; 5 = a lot)	4 (n = 2) 5 (n = 2)
Gameful teaching (5 point Likert scale 1 = none; 5 = a lot)	4 (n = 1) 5 (n = 3)

Source(s): Original table

Table 1. Background of the participants (n = 4)

Subsequently, the questionnaire collected information on teachers' nationality, years of teaching experience, and the subjects they taught. Following this section, three Likert-scale (1–5) questions were posed: "How much video gaming experience do you have?"; "How much traditional/not computer-based gaming experience do you have? (i.e. board games, role play)"; "How often do you use games or gamification in your teaching?". Teachers indicated their experience level by circling 1 for "none" and 5 for "a lot".

After completing the questionnaire, the focus group interview commenced. This phase included inquiries about teachers' prior gaming experience, their knowledge and perspectives on gameful educational designs, and their practices regarding gamification and game-based learning. Initially, participants discussed their responses to the metaphor analysis, sharing their opinions on the relationship between public education and gamefulness. Clarifying related terms and concepts was crucial to understanding teachers' beliefs. Therefore, after discussing teachers' previous knowledge, the interviewer provided definitions based on the literature to establish a theoretical framework for the conversation.

Lastly, teachers' beliefs regarding gameful education were assessed using another Likert scale question: "Gameful approaches are good for learning in a school context." Teachers indicated their responses by placing a marker on a printed scale from 1 to 5. Additionally, they were asked about the potential advantages, disadvantages and barriers of gameful educational designs to further explore their perspectives.

4.4 Data collection

The focus group interview lasted approximately 60 min and was conducted face-to-face in English in June 2023. The session was recorded, and immediate transcription followed. Each participant was assigned an individual code for anonymity, which they wrote on their paper questionnaires. During transcription, the interviewer identified participants only by their assigned codes. All audio files were also deleted afterwards, ensuring no personal data was stored.

4.5 Ethical issues

Ethical approval was obtained from the Research Ethics Committee at the Faculty of Education and Psychology of Eötvös Loránd University, Hungary. Before participation, the teachers signed consent forms that provided comprehensive information regarding the research objectives and procedures.

4.6 Data coding

This study employed a deductive approach to code the data. The authors had previously developed a typology of factors influencing teachers' attitudes toward gameful education and practices through a systematic literature review. In this study, this typology was applied to code the responses provided by the practising teachers.

5. Findings

5.1 Teachers' perspectives on the compatibility of school learning and playfulness

Although the sequence of sentences was carefully planned, some teachers referenced gamefulness when completing the initial sentence about school. This might have occurred because teachers had the opportunity to view all the sentences on a single sheet and were thoroughly informed about the research topic beforehand, potentially steering their responses toward gameful education. Nevertheless, their answers indicated that teachers perceived gamefulness as achievable and desirable within public education. For detailed teacher responses, see Appendix.

The participating teachers associated the concept of school with life, home/family, and a somewhat dull environment from the students' perspectives. They highlighted the

challenging, monotonous, and sometimes unfair aspects of school learning, where students and teachers spend significant time together. In contrast, teachers depicted games as colourful rainbows, refreshing water, enjoyable activities, and various treats. Interestingly, their descriptions of games were more positively charged compared to their portrayals of school. According to their perspectives, play is seen as an essential, enjoyable, and rejuvenating activity, while learning is viewed as an opportunity for development, exploration, experience, and, surprisingly, a disconnection from the digital world. When associating play with the school environment, they described it as refreshing, energising, "life-saving", and fun.

During the focus group interview, teachers unanimously agreed on the strong correlation between playing and learning. All participants strongly affirmed that "Gameful approaches are good for learning in a school context." Motivation, engagement, and incidental learning – often cited as benefits of gameful education in existing literature (Kapp, 2012; Mazarakis, 2021) – were the most frequently mentioned by the interviewed teachers.

Furthermore, all teachers expressed that play should be incorporated into formal education. Teacher 3 expressed a desire to "*make all the teachers use it, because the learning process for both teachers and students becomes much easier and enjoyable at the same time*". Teacher 1 suggested that "*learning could be more efficient with games. It is mixing the older methods with gamification or with games.*". This framing suggests an extension of traditional methodologies rather than a replacement.

5.2 Teachers' understanding of terms related to gameful education

The interviewer discussed three interconnected terms: gamification, game-based learning, and gameful learning. To explore these concepts, teachers were asked to share their interpretations. Subsequently, the interviewer provided definitions based on the literature. Teacher 1 offered the following perspective: *"Maybe gameful learning is what we have talked about before, so using a lot of games or teaching through games. Gamification maybe when we use games not only for teaching, but also for evaluation."*

While other teachers agreed with this interpretation, it was unclear whether they fully concurred or lacked alternative, grounded ideas regarding these terms. According to Deterding *et al.*'s (2011) definition, gamification is "the use of game design elements in non-game contexts" (Deterding *et al.*, 2011, p. 2). This definition extends beyond evaluating the learning process, although teachers often associate it primarily with assessment (Kapp, 2012).

Game-based learning (GBL) involves learning through a game (Opris *et al.*, 2021). This term aligns with the teachers' views on gameful learning, emphasising the need to clarify these terms. For this interview and research paper, "gameful learning" is used as an umbrella term encompassing both gamification and game-based learning (Deterding *et al.*, 2011).

5.3 Factors influencing teachers' gameful practices

The authors' systematic literature review established a typology for coding factors influencing teachers' gameful practices (Bacsa-Károlyi and Fehérvári, 2024). This section presents the study's findings within that typology and details the frequency of each code within the identified factors (see Figure 1).

The interviewed teachers had positive attitudes towards gameful learning. However, they also mentioned the opposing views of their colleagues. Based on the results within the "individual factors" theme, the subthemes of "beliefs about gameful learning", "experience", and "personal characteristics" were identified as supporting factors. Conversely, within the "institutional or system-level factors" theme, almost every subtheme was noted as a hindering factor ("adaptability", "environment", "pedagogical development opportunities" and "regulations") except for the subtheme of "materials".

The code group, "beliefs about gameful learning", encompasses several aspects, nearly all evident in the responses during this focus group interview. Teachers frequently mentioned

that the perceived value of gameful learning can strongly influence their willingness to implement gameful methods ($n = 5$).

> [Colleagues] say: "You're work is very easy, because you're an English teacher, you know a lot of games. You may bring lot of games to your students, but it's a very difficult subject, I have a lot of syllabus to teach, so I have no time for just playing." (Teacher 2) (. . .) „This system even works better with harder subjects. It makes it really fun and easy for [the students]. (Teacher 3)

The most frequently coded benefit of gameful learning is the entertaining and enjoyable element it introduces to the learning experience ($n = 12$). For instance, one teacher expressed that *"[gameful education] is the greatest mean for motivation"* (Teacher 1). At the same time, another teacher emphasised that "*we can show to children and to parents that school is not a painful place, because when children go to school happily, it means that you can learn or work with them more easily. If they are motivated and they like school and like to go to school"*. (Teacher 2).

The interviewed teachers emphasised numerous opportunities regarding gameful education ($n = 8$). However, they also expressed disappointment that some of their colleagues perceive it as a waste of time and a distraction from learning ($n = 3$).

> I love it when I teach something, and then I make them understand, and the next lesson, they all remembered, and they start using it, and I can hear it, I can see it, I can see the difference between the classes that have games with their education and the ones that don't have anything. (Teacher 3)

> [Another teacher] doesn't believe that gamification is a good idea for the kids, it's just for teachers who just want to do nothing and just spend some time at the school and just get their salary and do nothing. (Teacher 3)

Within learning theories ($n = 2$), teachers mentioned active learning. Additionally, they highlighted collaborative learning, noting that during play, children "*can learn from each other as well"* (Teacher 4). Practitioners believed that gameful learning might not motivate everyone in every circumstance ($n = 2$), and that it can be hard to engage all students' interests ($n = 1$). However, they also expressed that using traditional methods would not necessarily be more efficient in these cases (Teacher 4). Generally, gameful education can contribute to individualised learning and differentiation ($n = 2$), and most children appreciate gameful methods. It can also cause positive changes in students' behaviours ($n = 3$) and in the classroom climate ($n = 1$) or result in classroom management issues ($n = 2$) and generate conflicts if students have behavioural problems (Teacher 2).

> Some students who are not really as good as the others, and the passive ones, they become active when you just bring the gamification to their lessons. And all of a sudden the passive one who was always avoiding the lessons, who would always be sleepy and not want to participate at anything would be the best students out of all. (Teacher 3).

> And also, let's say, I will give it a percentage, like 90% of the time. It's successful with like 90% of the kids, but the rest 10% are the ones who are always troublemakers. So they take advantage of the situation, "Ah, we are playing games; I can maybe just do other stuff, like talk with my friends or finish the homework of the other subject". Because they're just playing games, so who cares? Or the ones who are always nagging about it, and you can't make them like something. (Teacher 3)

Appealing characteristics of gameful education (such as activeness, challenging, drawing attention, and student-centred learning) were also highlighted during the interview ($n = 4$). The application of gamification within the assessment process was mentioned only once when teachers defined the term "gamification". In contrast, its effectiveness in skill development was mentioned frequently ($n = 11$) (e.g. social competence, creativity, conflict management, problem-solving, self-confidence, skills related to STEAM and language education).

> It helps to keep the focus (. . .) [with games] you can keep [the children] engaged (Teacher 4).
>
> Just like forget about the old method, which was teacher-based in the classroom, and so now by gaming it will make students more active, so it will be student-centred and teacher observation during the lesson. (Teacher 3)
>
> And if the games are based on competition, they exactly learn the lesson, like life lesson. Like today when they were playing a game, the team who lost, they were so upset, and they couldn't accept the reality that they lost, and they couldn't see the reality that they made a mistake (. . .) So that's how the teacher gets involved and then try to teach them something about life. (Teacher 3)

Previous experiences have a significant impact on the adoption of new methods. Teachers' demographic backgrounds did not emerge as influencing factors during the conversation, but previous education ($n = 2$) and professional ($n = 4$) experiences did. For instance, Teacher 3 shared a childhood experience involving an English teacher who was hurtful toward students. She recounted, "*I did my best to prove the teacher was wrong, and I made my decision to be an English teacher to make it fun for kids to learn it and to believe in themselves, that they are the best and they can do it in a way they want it. And that's why I'm fighting with those teachers who say gamification is not fine. It is not right to do it; [it is] wrong*." Based on this story, gamefulness strongly defines her teacher identity. She also mentioned that previous successes reinforced her gameful practices, a sentiment that was echoed by others.

Teacher 4 said their colleagues often stick to traditional methods since they are used to being taught and taught that way. *"[Other teachers] have learned with [the traditional] method. They can't think out of the box"* (Teacher 4).

They also stated that professional experience can enhance implementation since teachers can see their students reacting positively to gameful methods.

> You would see that how the other kids were happier and better, especially at the end of the school year, you could see that on their faces and on the paper and the way they could've speak English and all the other things. I could even compare it (. . .) As a teacher, what makes me happy is to see the improvement in my students. (Teacher 3)
>
> It's very important because I see the kids' faces when we play, and we learn a lot of things during. (Teacher 1)
>
> But when we practice to learn with games, I gain experience as a teacher, and I don't need to prepare a lot for the next time. (Teacher 1)

Personal characteristics can also affect teachers' gameful practices. Teachers' competence ($n = 1$) and personality traits (e.g. openness, innovativeness) ($n = 3$) can impact practices. Teacher 1 highlighted, "*It could be a disadvantage if the teacher cannot choose a suitable game for that topic, for that class, for those type of students*". The fear of change ($n = 3$) can be a hindering factor, while teachers' benefits and personal development ($n = 5$) can support new practices.

> Well, kind of I feel happy, like "ok, they really like me as a teacher and they see me as the saviour one, but on the other hand makes me think like if the [other] teacher was a bit more fun and added some more game and attracted students more, it could be a different story. And I don't want to be in the place of that teacher. I really get upset if students want to leave my lesson for using that excuse. (Teacher 3)

Within the "institutional or system-level factors", the adaptability of gameful methods appeared crucial for teachers. Relevance and perceived usefulness of games and methods can influence implementation ($n = 2$), and if the method is hard to adapt ($n = 1$), or the class is unprepared ($n = 4$), or the size of the classroom is not adequate ($n = 1$), it can hinder implementation.

> Still, I have lots of problems with [the students] because I see them maybe one or two hours a week, and they see more the other teacher who doesn't play a game. (Teacher 3).

The environment significantly influences implementation ($n = 4$). Teachers referred to the encouraging effect of a supportive community, However, more commonly, they noted the barriers posed by a hindering environment that includes sceptical students, parents, colleagues, school leaders, and decision-makers ($n = 5$).

> "Teaching with games means no working", it is not true. Because you need a lot of prework, and that's why my colleague doesn't want to teach with games because it's more easier to say, "Children, pupils, take your book, open it on page whatever . . . and let's work!". They don't want to invest this work. (Teacher 4)

> Still, I have lots of problems with [the students] because I see them maybe one or two hours a week, and they see more the other teacher who doesn't play a game. She doesn't believe that gamification is a good idea for the kids, it's just for teachers who just want to do nothing and just spend some time at the school and just get their salary and do nothing. (Teacher 3).

> I think that it is not only teachers who should use this method. Games and gamification, anything that we can use, it also should include parents. Because still, parents have the old mentality. (. . .) And then not just the trainers, but also the parents must understand and help the teachers with this new method. (Teacher 3)

> If the parents are not informed well or trained well, teachers can have some kind of troubles with the school managers if they don't also respect this method. And that's the kind of disadvantage. And not having enough support from government to make it official and formal is also kind of a disadvantage. (Teacher 3)

Pedagogical development opportunities ($n = 6$) are crucial for implementing gameful methods. The lack of these opportunities is usually a problem.

> I mean governments even have to decide to add it to their methods of teaching or like train the trainers to make them understand how useful that is and know just like forget about the old method which was teacher-based in the classroom and so now by gaming it will make students more active so it will be student-centred and teacher observation during the lesson, so I definitely agree adding it to the education and I use it as well myself. (Teacher 3)

Awareness of available materials ($n = 4$) is the only supporting factor within the institutional or system-level factors. However, lacking these useful and supportive materials can hinder implementation ($n = 1$). Teachers also said that the lack of materials is only an excuse for teachers who are reluctant to implement gameful methods since simple and affordable tools can also be effective in gameful education.

> And also we have other sources and other colleagues who are just working on it with a team to find more and more games, and they always publish it for free. And they let us use it for free, which is awesome. (Teacher 3)

> Like for the type of the game. Which is like, ok, if I do it, they will take advantage of it and they will just ruin the game, so I won't use these specific ones for that class if they have like lots of naughty boys or girls in it. But there is no excuse for not using games, even if they're like naughty ones. (Teacher 3)

> For the ones, especially the teachers, who say that "we can not do it because we don't have enough materials", especially for the digital ones. They are like ", well, we don't have devices, not all the students have mobile phones or tablets or iPads to bring to school, and schools can not provide it." It's just an excuse; I don't accept it. Then you can do it with a paper and a pencil; you can just create a game, so it doesn't have to be a digital one. You can always create a game out of nothing, even without materials. (Teacher 3)

> And it doesn't have to be much work to prep your game, because even the smallest games function very well in maths as well. (Teacher 4)

Regulations can also complicate implementation. Education systems that are overly fixated on exam and test results and focus solely on learning outcomes, may not fully recognise the value of gameful methods in enhancing student engagement A strict curriculum ($n = 2$) or other limitations can hinder teachers' gameful practices ($n = 3$). Teacher 3 repeatedly emphasised that governmental support is crucial for mandating gameful teaching practices.

> I wish like governments would, I hope that they would support more like through advertisement for example. Schools would advertise over it. Unfortunately, we see all the advertisements over exams. (. . .) All the numbers and, you know, statistics say that we are a good school because the average grade of the students is high. No, just why don't you talk about the methods that are used in your school that attracts more and more students here, right. (Teacher 3)

> So if there was like a rule or a law like we have some ok syllabus of teaching we receive at the beginning of the school year, (. . .) you prepare a lesson plan, but your lesson plan needs to contain a game as well. Otherwise, it will be refused. (. . .) If it's a must, then that would be easier for even those teachers who are against this system. Because they seriously think it's extra, and we just want to do nothing. Unfortunately. (Teacher 3)

6. Discussions

The interviewed teachers exhibited positive attitudes toward gameful education (Bourgonjon *et al.*, 2013). Interestingly, their descriptions of games were notably more positive than their depictions of the school environment.

The teachers provided insights into distinct concepts, such as gamification and game-based learning, aligning closely with the definitions cited in this paper (c.f. Opris *et al.*, 2021; Zainuddin *et al.*, 2020).

The authors validated the previously established typology of factors influencing teachers' gameful practices. While some factors in the typology were not addressed during the interviews, the primary code groups were all referenced. Consistent with previous findings, individual factors such as teachers' beliefs about gameful learning, experience, and personal characteristics were mainly mentioned as supporting factors. Conversely, institutional or system-level factors such as adaptability, environment, pedagogical development opportunities, and regulations often hinder implementation, but awareness of available materials can support teachers in their practices (Bacsa-Károlyi and Fehérvári, 2024).

Based on the typology, key findings indicate that teachers highlighted unsupportive environments and curricula as major barriers to implementation. Teacher 3 emphasised the need for governmental support in reshaping exam-centric educational systems (Luo *et al.*, 2021; Yong *et al.*, 2019, 2021), indirectly influencing teachers' attitudes toward gameful education. Teachers noted that some colleagues consider gameful education unsuitable for public schools, citing concerns about its pedagogical effectiveness, lack of time and available materials as reasons for not adopting these techniques (Leonardou *et al.*, 2021). Despite the prevalent focus on digital tools in research on gameful education, teachers often distinguished learning and gamefulness from its digital context. They argued that digital tools are not indispensable for a gameful lesson. Hence, research should emphasise non-digital approaches within gameful education (Sun *et al.*, 2023).

7. Conclusions and implications

As a limitation of this study, the focus group interview was conducted in English, which was a foreign language for every participant. During the interview, the teachers helped each other

overcome language barriers. However, expressing individual opinions in a foreign language may have restricted the depth of their answers.

Another challenge was the limited number of participants, with only four teachers taking part in the focus group interview. Although everyone had the opportunity to speak and the atmosphere was calm and relaxed due to the participants' familiarity with each other, there was uneven participation among them.

In conclusion, the empirical study's results validated the typology previously created by the authors. Individual factors were identified as supporting elements, while institutional or system-level factors were primarily seen as hindrances to teachers' gameful practices. The interviewed teachers exhibited positive attitudes toward gameful education, driven by their beliefs in its effectiveness, previous experiences, and personal characteristics. However, they sometimes struggle to adapt the method to meet their students' needs. An unsupportive environment, including sceptical colleagues, parents, and school leaders, can be discouraging. The lack of pedagogical development opportunities can be problematic. However, awareness of valuable materials can help practitioners in the implementation process. Additionally, exam-centric education systems and strict curricula also do not favour gameful practices.

This study provides empirical evidence on teachers' views about gameful education and the factors that influence their gameful practices. By presenting teachers' perspectives in their own words, this qualitative research offers a thorough understanding of the significance and support of gameful education. Further research should expand on these questions with a larger sample of practising teachers and consider including pre-service teachers to achieve a more comprehensive analysis.

These findings offer valuable insights for in-service teachers who require support in implementing gameful practices by providing practical examples. The study also highlights the importance of horizontal learning among colleagues, which supports the adaptability and integration of innovative methods. Additionally, school leaders and decision-makers can benefit from this study's outcomes when considering the integration of gameful approaches into curricula or encouraging such practices. Furthermore, the paper emphasizes the necessary shift from exam-centric to student-centred educational cultures.

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(The Appendix follows overleaf)

Appendix

Table A1.
Metaphors created by the teachers

Participant	Metaphors
Teacher 1	School is like LIFE, because it has its own challenges
	Games are like rainbows, because they make life more colourful
	Playing is like having fun, because it is relaxing
	Learning is like growing, because humans can develop by learning
	Playing in school is like oasis in the desert, because it could be refreshing and "life saving"
Teacher 2	School is like our second home/family, because we live there/together
	Games are like a cup of water, because they are refreshing
	Playing is like breathing, because it is a very important thing in life
	Learning is like exploring natures, because we learn and exploring . . .
	Playing in the school is like a fresh breeze, because it is energising
Teacher 3	School is like a boring place for students, because there's no gamification
	Games are like the best part of the education, because they can turn the lessons from being boring to very fun ones
	Playing is like medicine for the kids, because by playing they can learn and get better
	Learning is like growing process, because it makes kids be more experienced and helps them grow up
	Playing in school is like the best activity ever for the kids, because kids will enjoy school more and it makes them happier
Teacher 4	School is like Life, because it is diversified and sometimes unfair
	Games are like sweets in a bowl, because they're different, but still sweet.
	Playing is like drinking a cold soda in the summer, because it's refreshing and cool
	Learning is like a total disconnection of an electronic device, because I use courses to distract my mind
	Playing in school is like everyday fun, because some children ignore learning in the traditional way

Source(s): Original table

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