“If I played this game again, I would be unethical”: Challenges players face when playing games for ethics literacy*

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Abstract

Gamification of education or game-based learning has been considered as a means of enhancing ethical literacy in educational practices. However, the relationship between games and ethics has also led to polarized views: on the one hand, games can enhance learning outcomes by providing engaging and simulating experiences; on the other hand, certain game mechanics and features may easily reinforce unethical intention and behavior, which seem to contradict the ultimate goals of ethics education. This presents a challenge for game design in balancing playability and ethics-related serious purpose. Therefore, it is important to understand how learners, who are also players, perceive the value of using games for learning ethics, especially whether and what kinds of issues and hurdles they encounter and identify. To deepen our understanding of challenges in game-based ethics education from learners’ perspective, we conducted a four-day workshop study in which 32 participants played and evaluated different games designed to teach business ethics. Following each game session, participants were invited to take part in interviews. Through the thematic analysis, we identified 21 challenges categorized across three phases of the self-regulated learning process. These challenges were further discussed in detail, and three dilemmas were extracted, offering insights into key considerations on designing and implementing gamification to enhance ethics literacy.

Keywords

Serious Games, Gamification, Game-Based Learning, Business Ethics, Moral Literacy

1. Introduction

Ethical literacy, knowledge, and skills are primarily acquired informally throughout life, shaped by upbringing, cultural context, societal norms, and the specific circumstances of a given time. However, formal avenues for developing ethical competencies also exist, particularly in domain-specific areas such as business, biomedical, or engineering ethics. These are taught in educational institutions and workplace training programs. Teaching ethics is widely acknowledged as a complex process, encouraging learners to cultivate independent thinking about ethical implications [1]. Traditional approaches to ethics education, often relying on lectures and "chalk-and-talk" methods [2], have been criticized for limiting learners' autonomy in decision-making by presenting predefined solutions [3]. These methods typically focus on retrospective cases, lack experiential immersion, fail to engage learners emotionally, and do not adequately develop practical, application-oriented skills [3], [4], [5]. In contrast, these limitations can be addressed through pedagogical approaches which emphasize intrinsic motivation and engagement [6], including game-based learning and gamification of education [7]. These approaches are expected to provide experiential and reflective learning experiences and are particularly effective for teaching multifaceted and abstract topics such as ethics [8], [9].

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While games and gamification have generally demonstrated significant positive effects in ethics education due to their ability to create a safe environment for simulating decision outcomes [10], [11], fostering more realistic learner responses [12], [13], enhancing ethical awareness [14], [15], and improving moral reasoning [16], [17], the challenges associated with implementing these approaches are often overlooked. Research on gamified solutions in ethics education usually emphasizes learning outcomes while neglecting to examine the underlying reasons for negative or insignificant effects. Although previous studies have mentioned some difficulties, such as confronting real moral dilemmas [18], restrictions on realistic decision-making [19], and the tension between education and entertainment (which can provoke unethical behavior, e.g., winning at all costs, potentially undermining the educational goal of fostering ethical understanding) [18], [20], these challenges provide only a fragmented view and lack a deep understanding of their underlying causes and dilemmas from the learners' perspective. This gap which leads to challenges in applying this approach, is not unique to ethical education but reflects a broader trend in education research within the academic community [21].

Therefore, this study seeks to contribute to the nascent literature on the challenges and dilemmas in gamification of ethics education. More specifically, we focus on *the hurdles and issues that learners / players experience and perceive, based on their self-evaluations and self-reflections during the process of learning ethics through gameplay*. We conducted interviews with 32 participants recruited for an interactive on-site workshop study related to business ethics games. The self-regulated learning theory (SRL) is adopted as the theoretical lens [22] to understand which stage of metacognitive learning poses difficulties in integrating games into ethics education.

The findings of this study enrich existing literature in the interdisciplinary fields of game design, education, and ethics by deepening our comprehension of the complex interplay between gamification and ethics learning. Furthermore, the results help uncover latent factors influencing ethical literacy, proposing dilemmas for future design guidelines and research.

2. Background

2.1. Gamification

Gamification has been considered one of the most promising experiential approaches to education and instruction, offering the potential to engage individuals, motivate action, solve problems, and foster learning [23], [24]. Academically, gamification developed from serious games and playful design, however, to differentiate it, gamification was initially defined as the application of game mechanics, elements, dynamics, and design principles in non-game contexts [25]. Over time, with the development of gamification practices and the research field, the concept has evolved to focus on bringing gamefulness, positive experiences, and happiness (as games do) into existing reality across various domains, including education, economics, technology, culture, society, and healthcare [26]. This overarching concept can be considered an umbrella term, encompassing a broader range of gamified practices and approaches, simulations, serious games, discrete game elements, and diverse gamified systems and platforms.

In both scientific literature and practice, terms such as *game-based learning* [27], [28] and *gamified learning* [29] frequently appear alongside gamification of education. These terms refer to the application of game-related approaches to influence learning-related behaviors or attitudes, where games and their design elements, principles, gaming technologies and gameful experiences are integrated into the learning process, modifying or reshaping learning environments. The authors wish to clarify that this study does not focus on the nuanced distinctions between these academic terms; however, gamification can be considered a more abstract concept that includes game-based learning. Instead, this study investigates and interprets the relationship between games and ethics, focusing specifically on challenges associated with game design features and gameplay during the learning process.

2.2. Effectiveness of gamification

Although gamification-related approaches have generally demonstrated positive outcomes in education, supported by persuasive arguments and explanations for their success [24], [30], [31], the reasons behind negative or insignificant effects have not been comprehensively or adequately addressed within the academic community [21]. On the one hand, attempts have been made to identify both antecedent factors influencing the acceptance and adoption of gamification in educational settings, and the challenges inherent to gamification mechanics, elements, and principles. On the other hand, the literature on these challenges remains comparatively scarce, lacks proper systematization, and is often devoid of convincing empirical evidence.

The factors influencing the adoption and acceptance of gamification in educational settings include, for instance, curriculum misalignment [30], [31], where gamification does not adequately cover or align with educational programs, and content challenges, such as achieving a balance between entertainment and educational value [32], [33], [34]. Additionally, expertise-related issues arise due to educators' insufficient knowledge and skills [32], [33], as well as difficulties in utilizing the necessary technologies [33]. Infrastructure and administrative burdens also pose significant challenges during and surrounding gamified interventions [35], [36]. Furthermore, the costs and time associated with developing or implementing appropriate gamification tools [32], [36], biases among educators and students regarding the effectiveness of gamification [32], and the voluntary nature of participation [37], [38] remain notable barriers.

Dah and colleagues [21] articulated several barriers directly inherent to gamification that may contribute to its potential failure. First, one issue is the shallow application of gamified elements within the educational system, which fails to transform the learners' experience. Second, the excessive and arbitrary use of rewards can lead to the overjustification effect, undermining intrinsic motivation—a crucial determinant of success. Third, an over-reliance on basic game elements, such as badges, points, and leaderboards, and on narrow models and theories to explain or design the gaming experience, introduces uncertainty into gamification's effectiveness.

Another drawback of gamification is its "one-size-fits-all" approach, where the same gamification elements are applied universally [23], [39]. For instance, motivators such as badges, points, and leaderboards may be ineffective for students who are not naturally competitive [38], highlighting the lack of personalization in such gamification. Moreover, gamification can have unintended side effects [39], especially when user consent is not achieved. For example, users may be unaware that they are participating in a game, may not understand its rules, and may perceive it as unfair, which, in turn, leads to negative experiences. Additionally, games may fail to match players in terms of difficulty [33], being either too easy or, conversely, too challenging. Regarding gamification mechanisms and elements that shape social interaction, several risks can be identified, including social loafing, polarization within playing groups, and process loss [23].

2.3. Gamification and ethics education

There is a growing body of research on game-based learning, simulation games, and gamification for ethics education [40], which predominantly reports positive outcomes. These include fostering more realistic responses from learners [12], [13], enhancing ethical awareness [14], [15] and moral reasoning [16], [17], and establishing moral values [41], [42], [43]. However, previous research has also started to highlight issues and open up discussions about what might go wrong when applying gamification in ethics education. For instance, challenges include issues related to game adoption [44], the dependence of gamification's effectiveness on technology quality and availability, and its alignment with learners' styles (active or passive) [9]. Additionally, integrating self-reflection or prosocial nudges into games could be ineffective in producing desired learning outcomes [45]. Games might suffer from a weakness in creating the authentic experience of facing a real moral dilemma [18], and in-game decisions are frequently constrained, limiting realistic decision-making [19]. Furthermore, players may adopt a player-centred mindset rather than a learner-centred one during gameplay [18], [20]. For these individuals, a game is perceived merely as entertainment,

disconnected from real-world contexts. They may play with a focus on winning at all costs, rather than mastering skills or acquiring knowledge, potentially leading to the practice of unethical behavior that contradicts the original educational objectives. These challenges represent components of a broader and more systematic perspective on the factors that hinder the effective application of gamification in ethics education—a perspective that has yet to be fully conceptualized.

Among various ethics domains, business ethics has become one of the most popular and extensively researched areas in which gamification has been widely adopted and studied as a means to enhance ethics literacy [40]. Similar to the current research tread in most gamification-related fields, the majority of literature on gamification of business ethics education and literacy has primarily on exploring and validating its effectiveness. Although non-significant, negative and mixed effects of gamification have been observed (more often seen in quantitative studies), the underlying reasons and mechanisms remain unclear. This calls for further effort in qualitative approaches which would provide deeper insights into factors that contribute to issues, problems and ineffectiveness of gamification in business ethics education and how gamification should be designed to address these challenges.

Within the reviewed literature, only one qualitative study [19] was identified that thoroughly examined the process of moral decision-making within a game-based narrative context. Notably, this study was limited by a sample size of just three participants, who shared their experiences within a focus group setting, potentially skewing individual perceptions. Moreover, a review of the existing literature reveals that few studies are grounded in theoretical frameworks. To fully understand the challenges that gamification introduces to the educational process, it is insufficient to rely solely on theories of gamification design, information systems, or social sciences. Instead, it is essential to adopt frameworks from the learning sciences, such as self-regulated learning (SLR), to evaluate gamification's impact on specific learning attributes systematically.

3. Self-regulated learning theory

One particularly relevant framework in the learning sciences is the well-established theory of self-regulated learning (SRL) [46], which explains how people learn. According to this theory, learning is a human activity, initiated by learners themselves [46], encompassing (meta-)cognitive, behavioral, motivational, and emotional dimensions, where learning processes can be monitored, controlled, and regulated [22]. While there are several models of self-regulated learning [22], most converge on three main cyclical phases of metacognitive learning [46], [47]: *forethought, performance and reflection.* The forethought phase, which occurs before learning efforts begin, involves goal setting, planning, and the establishment of self-motivational beliefs, helping learners prepare for the learning process. The second phase, performance, directly relates to the processes that occur during the learning activity, such as self-instruction, attention focusing, task strategies, and self-experimentation. This phase involves the application of methods and strategies selected during the forethought phase. Finally, the reflection phase occurs after each learning effort and involves evaluating the effectiveness of strategies, understanding causal attribution, and identifying lessons learned. Insights from this phase feed back into the forethought phase, creating a cyclical learning process.

When integrating gamification into ethical literacy, learners also progress through these phases. It is crucial to consider how game-related factors may contribute to students' challenges and identify in which learning phases these challenges arise during their gameful experiences. Therefore, this study uses the self-regulated learning theory [46] as a theoretical framework to explore the challenges of employing gamification for ethics literacy and learning.

4. Research methodology

Qualitative methodology was selected as particularly well-suited for exploring areas with limited prior research, providing a deeper understanding of why gamification in ethics education may fail, leading to negative, mixed, or insignificant effects. Given the study's primary goal of achieving a deep understanding of individuals' perceptions regarding the challenges players face when engaging with games for ethics learning, this approach aligns with the philosophical perspectives of interpretivism and constructionism. These perspectives emphasize subjective shared meanings, making qualitative methodology a fitting choice for exploring the issues under study [48]. The chosen phenomenological research strategy focuses on a specific phenomenon experienced by individuals and seeks to report the essence of that experience [49].

Participants. This study enrolled 33[2] individuals recruited through multiple channels to participate in workshops held at a university laboratory in Northern Europe between October and November 2023. The diverse group included both university students and staff. Specifically, the study covered four full-day workshops, with participant attendance as follows: Day 1 (8 participants), Day 2 (8 participants), Day 3 (8 participants), and Day 4 (9 participants). The final sample size was 32 participants, as one individual did not provide interview responses. Participants ranged in age from 18 to 59 years (mean age: 29.94) and were predominantly female (56.3%). The sample represents a mix of 13 nationalities, with one-fifth of the participants being employees or Ph.D. students.

Table 1
Descriptive information on the tested business ethics games

Games	Business Ethics Content (Level)	Ethics Sense-Making Styles	Learning Goals	Playing Mode
LMX: The Game! (LMX) [8]	Social relationships at work (personal)	Non-social Approach	Ethical sensitivity and reasoning	Single-player
Ethics Argumentation Game (EAG) [52]	Society's welfare (corporate, global)	Intransigence	Ethical sensitivity and reasoning	Competition
Privacy by Design (PBD) [15]	Privacy and business success (corporate)	Compromise	Ethical reasoning and motivation	Collaboration (teams)
Trading Trainers Game (TTG) [5]	Inequalities in global trading (global)	Principled negotiations	Ethical sensitivity and action	Between teams' competition

Note. The 4 games were used in each day's workshop (2 games - in the morning; and 2 games - in the afternoon session); they were all from the existing literature and adapted to the context of the present study. The order of each game was randomized and not repeated. To reduce fatigue from playing all four games in one day, participants were offered breaks after each game, including one lunch break. *More detailed information about the games can be found here.*

Materials. To achieve the study's goal, a series of workshops were conducted where each participant played four different classroom business ethics games (Table 1). These games varied in ethics sense-making styles [50], levels of business ethics content, and modes of social interaction.

[2]In total, 71 participants were randomly recruited among adults via Tampere University DMLab pool and filled out the registration survey for gaming and non-gaming conditions. 33 participants completed the gaming workshop, and 15 participated in the lecture.

Each game session was followed by an individual interview. The selection of these four specific games was deliberate, as they were designed by researchers to test specific learning effects in ethical education. The games were unfamiliar to all participants, ensuring no prior knowledge of the gameplay. Each game featured accessible printed materials and clear rules. Researchers who developed these games had previously noted certain challenges in their use, although without thoroughly exploring the underlying causes. The study's design, procedure, and data management adhered to the guidelines of the Advisory Board on Research Integrity [51] and the EU's General Data Protection Regulation (GDPR).

Onsite workshops. Participants were invited to join voluntarily by completing a registration form that included consent, demographic information, and details about the study's purpose. The four workshops were organized from 9 am to 5 pm at the same location and facilitated by the same researchers (Appendix B). During each workshop, participants were randomly assigned to teams of 2-3 members for each game. The gameplay duration was controlled, lasting 20-30 minutes, preceded by video instructions and the leader's explanation of rules, which took 10-15 minutes. Each participant in the full-day workshop received a 20-euro gift card as compensation for their time. In addition, a 50-euro gift card was raffled among the participants at the end of each workshop day.

Online interviews. Because the study involves games intervention and immediate personalized feedback for all participants simultaneously, a standardized open-ended interview was conducted. This format reduces interviewer influence and bias, increases the comparability of responses, and makes data organization and analysis easier than other interview types [53]. During the workshop, immediately after finishing each game, all participants were invited to individual booths to verbally answer pre-recorded video interview questions. Each interview was structured through a series of pre-recorded videos presented by one researcher and integrated into the LimeSurvey Platform. The same set of nine questions (Appendix A), brainstormed by a group of researchers, was used in all four interview sessions (for the four games). The first three questions focused on the participants' overall experience, asking them to describe it in three words; the elements of the game they could recognize; and their role in the game: player or learner (Q1, Q2, Q3). The next two questions inquired about their reflections on potential changes in their ethical behavior if they played the game again; and the knowledge they acquired through gameplay (Q4, Q5). Subsequent questions addressed the game's potential, challenges, and general feedback (Q6, Q7, Q8). Finally, participants were invited to share any additional thoughts or ideas they wished to contribute (Q9). If any clarifications were needed regarding the questions, the researchers in the lab were able to provide further details. All participants' responses were video- and audio-recorded using Noldus software with cameras and microphones.

Thematic analysis. Thematic analysis guidelines [54] were employed as the foundation for the data analysis, utilizing Atlas.ti as the selected tool for this purpose. A hybrid coding methodology [48] was adopted, combining deductive techniques, based on predefined theoretical structuring dimension (SRL), with inductive processes driven by interpretations drawn directly from the data. Two researchers were involved in the data analysis process. The analysis was not limited to responses regarding challenges; instead, it included any mentions of issues throughout the entire interview. To assess intercoder reliability, the second researcher independently coded ~22% of the dataset, achieving an agreement rate of 82.4% (reliable level, [55]).

5. Results

Following the generation of initial ideas and the collation of codes, 21 specific challenge-related themes were identified according to game design and gameplay-related factors and aspects (Figure 1). By referring to SRL, these challenges were subsequently classified into one of the three phases: forethought, performance, and reflection. However, this study does not examine the cyclic learning process but only covers the challenges across these phases.

5.1. Challenges associated with the forethought phase

Game rules/instructions. When game *rules are too complex*, players often struggle to engage with the core concepts and content of ethics learning. Their attention and effort become diverted to overcoming the"entry barrier" of understanding how the game functions. Additionally, some participants mentioned that they felt *overly controlled by the game rules*, which left them with little room for choice (e.g., when a role is assigned randomly, or when pre-written scenarios dictate progress), thus limiting players' freedom to manage gameplay and decreasing their autonomy in decision-making*: "The game would risk giving people the impression that we are not active decision makers or that even if we are decision makers, most of the time the results would depend on circumstances that are beyond our control"* (P2, LMX). In contrast, other participants struggled with navigating a game that featured *a more elastic and flexible framework of rules* (e.g., when everything not prohibited is allowed, or when players create their own rules). This lack of structure made some participants feel lost in the game, as they had no step-by-step tutorial on how to perform certain actions or address specific situations: *"Maybe add more strict about the rules, what people can do, what people cannot do"* (P22, TTG). Without this kind of explicit guidance, players might ignore the "teaching" situation, simply failing to recognize the underlying moral dilemmas. Furthermore, some players emphasized that game rules should always *be fair* and clearly define right from wrong. For such participants, the game could serve as a tool for developing internal moral principles, especially if they were previously unaware of the ethical dilemma presented. However, if the game is designed to test existing skills and knowledge, with some challenges intentionally hidden or veiled, these players may lose trust in the game if they perceive the rules as unfair or ambiguous.

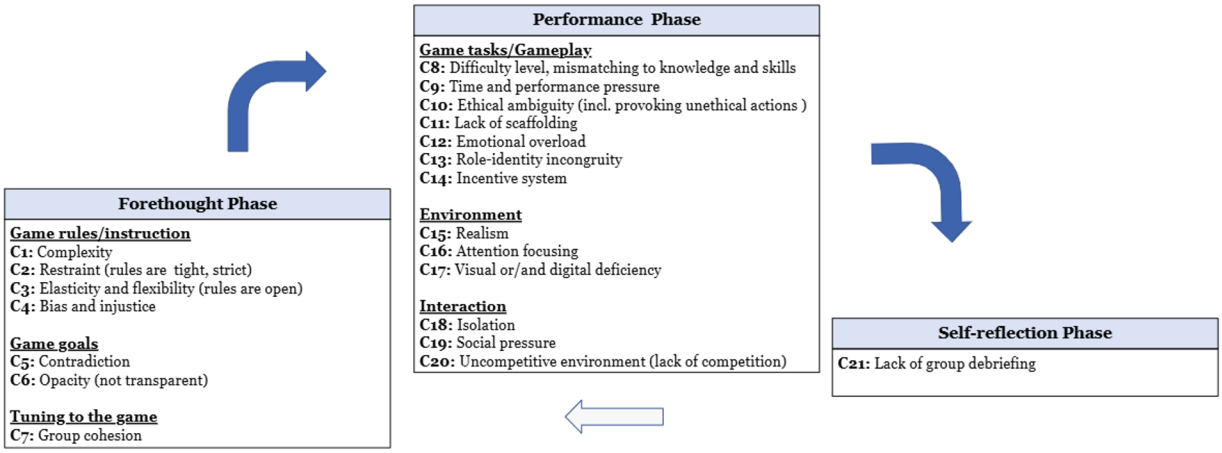

Figure 1: Challenges of ethics games, noted by at least five of the participants

Game goal. Another group of factors contributing to difficulties lies in the setting of the game's goals. For example, a goal such as collecting the most resources to win *may conflict* with the ethical objectives of the game if achieving victory requires unethical actions, such as cheating or stealing to gather resources faster: *"If you are in the mindset that you would do almost anything to win the game, it allows you to cheat in many different ways"* (P12, TTG). Additionally, many participants, accustomed to *transparent goal setting* in the educational process, expected specific learning objectives to be announced before the game. This would allow them to focus their attention on certain aspects and engage with them purposefully. Opaque or unclear goals could lead to players failing to understand the connection between the game and the lessons it is meant to teach: *"The bad side of the ethical dilemma can also be presented in such a way that people might feel attracted to that argument ... and we might deviate from the learning"* (P27, EAG).

Tuning to the game. Since most of the games involved group participation, and participants were often unfamiliar with each other, some players noted the *lack of a "tuning" phase* to help them

get to know one another and discuss game strategies. This lack of preparation made it harder for participants to collaborate effectively and engage fully in the game.

5.2. Challenges associated with the performance phase

Game tasks/Gameplay. Some participants expressed dissatisfaction with the *difficulty level* of the games, feeling that the complexity was not conducive to teaching ethics. If the game was too complex, participants found themselves focusing more on understanding the gameplay process rather than on the ethical dilemmas it was supposed to present. On the other hand, if the game was too easy, it ended too quickly, leaving little opportunity for meaningful learning. Furthermore, some of the games included features like *time and performance pressure*, which further influenced the perceived difficulty. Many participants complained that they felt rushed, unable to properly evaluate their actions or reflect on their decisions due to the pressure of the game mechanics.

Another common issue was the expectation that the game would *directly show participants what is ethical and what is not*. Without clear cues pointing to ethical or unethical situations, players struggled to recognize the dilemma introduced by the game. This led players, not only, not to comprehend the nuance intended by the game designer but also to make an unintended interpretation. Several participants noted that games could *provoke unethical behavior*, questioning the usefulness of such interventions. Some participants admitted to purposefully engaging in unethical actions because they wanted to either see "what would happen if" or win at any cost. Also, some who did comply with their ethical principles during the game stated that they were willing to change their behavioral intention: *"If I played this game again, I would be unethical"* (P8, TTG).

A few participants found it difficult to perform without the *constant oversight of the game facilitators or researchers*, as they expected guidance to help steer their behavior towards more ethical choices. Another challenge participants encountered was the impact of *emotions*, particularly negative ones such as stress, guilt, and anxiety. These emotions can distract them from the lessons the game was designed to teach. Intense emotional responses "froze" their ability to analyze the situation further, and in some cases, this emotional overload discouraged their continued participation or engagement in activity:

> "*At least I can say that the first words are definitely stress, injustice or helplessness. Helplessness and frustration...I was really frustrated, I just felt like I was a burden to my family and I did not want to play it at all…I don't like this game. I do not know why I felt like this, it was unexpectedly*" (P20, TTG).

Some players also experienced negative learning outcomes because of a mismatch between the *roles they were randomly assigned and their personal identities*. They struggled to fully immerse themselves in roles they felt did not align with their knowledge and skills. Participants also expressed concerns about the *absence of a reward and punishment system,* which could help promote ethical actions and discourage unethical behavior. Some players felt the need for additional in-game incentives to guide them, ensuring that they were making the right decisions and progressing in the correct direction.

Environment. Although the scenarios were based on real-life situations, many participants found the situations *distant from their reality*, which made the ethical decisions they made seem less impactful. In some games, participants reported that their *attention was scattered*, making it difficult for them to focus on ethical issues when making decisions. For instance, if the game placed heavy emphasis on the points system, it drew attention away from the ethical aspects, leading players to focus more on earning points rather than engaging with the ethical dilemmas: *"I was not really thinking about the ethics, I was just trying to balance of scores"* (P9, PBD). This scattered attention detracted from the sense that the games were fostering meaningful learning experiences. Moreover, the *absence of appropriate visual or digital cues* further complicated the learning process, as participants struggled to perceive the relevant content. In today's digital world, learners are

accustomed to receiving information through visual means, and without these, the ethical dilemmas may not provoke the necessary reflection.

Interaction. Since the games were played in different modes: single-player, competitive and collaborative, participants were able to assess how different types of social interaction impacted their experience. Many participants criticized *the single-player mode*, as they felt social presence and dynamics were crucial for successful ethics learning. In group settings, ideas could be shared, feedback provided, and the atmosphere could foster more engagement, laughter, and enjoyment. Conversely, some participants found that certain games introduced *social pressure*, which they identified as a challenge. This pressure triggered feelings of danger and stress, affecting their ethical decision-making: *"I felt the sense of peer pressure, I am voting for the wrong one. So maybe I have an ethical problem"* (P31, EAG). Also, for some players, the *competitive spirit* in learning games was important, which *"pushes players to do their best and show themselves better"* (P10, EAG), and *"sometimes the competition makes it more engaging and knowing from the beginning"* (P5, PBD).

5.3. Challenge associated with the self-reflection phase

Although the games themselves did not include structured post-game discussions, many participants emphasized that group debriefing is an essential component of game-based ethics learning. In the current implementation, players felt the lack of opportunities to share knowledge and engage in group discussions, which hindered deeper critical reflection: "I think the discussion afterwards is really crucial because it gives you the chance to exchange thoughts and discuss and learn more" (P9, EAG).

6. Discussion

The results of this study revealed the main challenges players face when using games in ethics learning. The data obtained largely aligns with previous research on gamification in ethics education and learning in general.

Some challenges, such as the complexity of rules or the level of difficulty during play, can be explained by the failure to achieve the state of "flow" [23], [33]. This state, characterized by a balance between skill and challenge levels [56], is crucial to match the individual needs of each player. The absence of this state may lead to feelings of boredom or anxiety. Achieving flow can also be influenced by the clarity of instructional materials and their suitability for learners' abilities [57], [58]. Limited scaffolding and minimal instructions, which allow learners to modify and adapt the rules, can only be effective if the students possess a sufficiently high level of prior knowledge and expertise on the relevant topics to provide "internal" guidance. Otherwise, students will need detailed step-by-step guidance and external stimuli [57], which could be embedded into incentive systems. In addition, as mentioned in earlier studies, unintended side effects, such as unfair perception of rules, can lead to negative experiences with gamification [39]. This, in turn, may undermine trust as a critical foundation for effective education, meaningful learning, and sustained achievement [59].

Clearly defined and consistent goals are one of the key attributes of gamified learning [23], [29], as they significantly enhance motivation to learn. However, the contradictions of goals noted by participants relate to the tension between ethical and unethical aspirations, which can create ethical ambiguity during gameplay. This contradiction may stem from two distinct goal orientations: mastery and performance orientations [60]. These orientations have been discussed in both learning sciences [61] and gamification [23]. While games are designed to foster the development of (meta)ethical competencies, an overemphasis on performance results can overshadow the focus on mastery and skill development. This raises questions about balancing entertainment with ethics education [20], especially when ethical issues, such as allowing cheaters to win, are highlighted [18], [20]. Moreover, the applicability of explicit goal setting varies at different stages of moral expertise development (i.e., acquisition of identification, elaboration, procedural, and execution knowledge) [62], referring to "one-size-fits-all" challenge [23], [39]. For

instance, during the elaboration stage, explicit moral goals can help foster a stronger moral focus, while at the procedural knowledge stage, the players may no longer need explicit goals, as they can independently construct their moral identity and establish personal standards about what is considered significant [63].

Many challenges highlighted by participants, such as rules complexity, mismatched difficulty levels, time and performance pressure, emotional overload, strain on role identity, and difficulty sustaining attention, can be explained through the lens of cognitive load theory [64]. This theory suggests that working memory is limited and unable to handle complex operations that have not been previously activated or stored in long-term memory. Since players had not previously engaged with gamification-based ethics education, the unfamiliarity of the games and the new concepts integrated into them likely caused cognitive overload, preventing optimal comprehension and internalization of the learning material. While collaboration can expand collective working memory, transactional costs may arise, such as the effort needed to establish communication and connections within the group [65]. These costs consume cognitive resources, hindering learning, particularly for players who needed to establish group cohesion before starting the game. Further, the perception of a shortage of visual or digital game elements is a valid concern. In a digital world where a significant amount of information is processed visually, the absence of corresponding imagery makes understanding more difficult. Moreover, multimedia learning theory[66] posits that presenting visual and verbal information simultaneously enhances knowledge retention and improves attention.

In addition to cognitive load, affective processes also significantly influence learning. Participants in this study reported experiencing strong emotions, mostly negative ones, which contributed to an unfavorable gameful experience. Previous studies on gamification in ethics education have similarly raised concerns about the impact of negative emotions on ethical learning [67], [68]. Nonetheless, research in learning sciences suggests that both negative and positive emotions can detract from learning [69]. The critical factor is not the emotional valence (negative or positive) but the level of arousal and the learner's ability to regulate these emotions. In some instances, negative emotions can serve as beneficial "teaching moments", enabling learners to recognize and correct mistakes [70].

Another issue in gamified ethics education is designing the game to ensure that lessons learned are transferable to real life and that the player's real-world identity is revealed within the in-game role. The findings of this study are consistent with prior research, which highlighted challenges such as creating realistic moral dilemmas [18], offering a broader range of choices reflective of real-life decision-making [19], aligning in-game actions with real-world outcomes, and fostering a sense of identity congruence between the player and their in-game role [71].

Social interaction also plays an important role in learning. Previous research supports the inclusion of social elements in gamification of education [18], [19], [72], while others find that prosocial elements can decrease learning outcomes and quality of experience [45]. In this study, participants expressed mixed reactions: some reported feeling isolated, others felt pressure from their peers, and some missed a sense of competition. These contrasting perceptions require further investigation. Additionally, participants highlighted the absence of group discussion after the end of the games. Self and group reflections is an essential component of self-regulated learning, as it provides an opportunity to consolidate knowledge and draw meaningful conclusions [61]. Interestingly, challenges such as social loafing, polarization and process loss, which were noted in previous studies, [23], were not reported by participants in the current research.

By identifying 21 challenges faced by participants in business ethics games, this study led to the formulation of three main dilemmas, related to the entire ethics learning domain. While this paper does not aim to resolve these dilemmas, it seeks to unpack and discuss them. A deeper understanding of these dilemmas will allow us to implement more ethically aligned gamification-related approaches to support effective learning outcomes and experiences.

Dilemma 1: Explicit lessons vs. implicit cues reflecting the complexity of reality. Explicit knowledge and instructions play an important role in teaching domain-specific knowledge

and skills [58]. According to cognitive load theory [64], such instruction is designed to avoid overloading working memory, making it easier to learn relevant information and filter out irrelevant ones. Incorporating explicit lessons into games helps players focus on the key aspects necessary for mastering the material [73]. However, learning within a "rigid" framework does not always reflect the complexity of reality and does not always facilitate facing a disorienting dilemma. What is learned in this way may not be applicable when faced with personal real-life settings. Moreover, lessons delivered through explicit instructions may conflict with learner's inherent principles. This raises the question of who determines ethical norms and decides what is relevant (i.e., who owns the process). In contrast, tacit knowledge, gained through personal experience, intuition, or insight [74], often shapes beliefs and actions. Games that rely on implicit cues and personal discovery can help develop this knowledge. However, whether the learner will be able to recognize and interpret the cues reflecting the reality on their own without external support.

Proposition 1: Games for ethics learning should harmonize the balance between built-in predefined lessons and free play with reality, considering the users' experience/knowledge and the possibility of external support.

Dilemma 2: Autonomy vs. control. In business ethics, as in other ethical domains, freedom or autonomy is a central theme[75]. Autonomy allows individuals to shape their lives according to their own plans that reflect their values. Without autonomy in decision-making and choice, one's life may be determined by the plans, preferences, and values of others, and may be subject to external rules. However, to truly appreciate the value of freedom, it is essential to follow ethical standards and norms, which help people understand where they stand regarding others' freedom and what is expected of them. Freedom without rules is destined to fail.

The integration of "freedom" elements in games allows players to exercise choice and control within the game (e.g., choice-based scenarios), which can enhance decision-making autonomy. Simultaneously, strict rules guide players along a structured path, reinforcing the educational purpose of the game. In this study, players noted that randomly assigned roles often conflicted with their internal values, making it difficult for them to fully adopt the role, thus losing control over the situation and the chance to act as active participants. Conversely, when too much freedom was provided in setting their own game rules, players felt uncertainty, due to the lack of clear ethical models. From an educational perspective, the ideal progression involves learners moving from reliance on external guidance (external scripting) to internal self-regulation (internal scripting) over time [76]. This raises the question: what degree of freedom and control is needed for a particular player at a particular moment to make learning truly beneficial?

Proposition 2: Games for ethical learning should find ways to guide users to develop decision-making autonomy through rules and control while balancing their degree for successful learning.

Dilemma 3: Encouraging ethical action vs. provoking unethical behavior. Games are often the subject of major debates regarding the potential inclusion of immoral elements [77], [78]. In educational games, it is generally believed that fostering behavior that sets a "positive" example is essential for learning and reinforcement. However, games frequently encourage players to step beyond typical real-world norms (e.g., "magic circle" [79]) and engage in actions they might not consider in everyday life. This raises an important question: Is it beneficial for educational games to include scenarios that encourage unethical behavior? Some participants expressed concerns that lessons may be misinterpreted, potentially undermining the game's educational value. On the other hand, the concept of moral cleansing [80] suggests that players might seek to "balance the moral scales" by compensating for in-game actions they perceive as morally wrong. In this view, experiencing unethical behavior in a game could encourage players to reflect on their actions and pursue experiences in real life that counterbalance this behavior. Alternatively, the moral licensing concept [81] suggests that past good deeds might give people a sense of "permission" to engage in immoral or problematic behaviors. Consequently, focusing only on ethical behavior in games does not guarantee that learners will consistently act ethically in real-life situations.

Proposition 3: Games for ethical learning should be approached with caution in terms of including elements and scenarios that reflect both ethical and unethical aspects that encourage action.

7. Contributions

Firstly, this study contributes to expanding the understanding of gamification-related approaches for educational purposes by utilizing the well-established self-regulated learning theory to explore the challenges in teaching and learning abstract and complex concepts such as ethics. Secondly, the proposed three dilemmas prompt further reflection on how to harmonize and implement ethical gamification effectively to foster ethical literacy. Thirdly, this study demonstrates the methodological rigor of a qualitative approach in ethical experimental pedagogy by capturing simultaneously the individual experiences of a relatively large number of participants immediately after a gamification intervention.

Moreover, our study's findings have practical significance to educators, game designers and developers. They increase confidence in conducting effective full-day workshops by leveraging popular gamification-based learning methodologies to enhance ethics literacy. Additionally, the study offers insights into recognizing challenges that may arise during various phases of gamified learning. Many of these challenges were linked to the competency levels of learners (i.e., novices or experts), each requiring different types of instructions, levels of autonomy, scaffolding and other learning supports. As a result, one potential strategy to mitigate and address these challenges could involve developing and implementing personalized game-based solutions.

8. Conclusion and limitations

By conducting a series of workshop sessions using four different kinds of games in ethics learning within the business context, this study investigated the challenges encountered by 32 participants. Through thematic analysis of interview data from the lens of self-regulated learning theory, we identified and discussed 21 challenges and formulated three dilemmas, which offer valuable insights into key considerations on designing and implementing gamification to enhance ethics literacy.

This study is not without limitations, which could be addressed in future research. Firstly, although the use of analogue games facilitates easy implementation and allows for a thorough exploration of the gamification's effects, incorporating digital tools may yield additional insights. Secondly, while interviews capturing participants' perceived experiences are acknowledged as fundamental in qualitative research, supplementing this method with other physiological or behavioral data could provide a more comprehensive understanding, cross-validation, real-time monitoring, and objective indication of triggers. Thirdly, three used games are social games, and individual perceptions and experiences may be influenced by the team dynamics and characteristics. Future research is suggested to control or examine such an effect as an interesting and important moderator.

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A. Pre-recorded interview questions

Q1. Could you describe your overall experience in at least three words? Just say the first thing that comes to your mind.

Q2. Have you recognized any game elements* or features and other factors that you pay attention to during gameplay?
Perhaps you are confused about what game elements mean. Game elements* - the elements and rules that make up the game, for example, points, badges, levels, roles, story-telling, achievement, randomness, teams, choices

Q3. Do you feel that you were a learner or a player in the game? Or both? Could you please elaborate?

Q4. If you play this game again, would you like to change something regarding your ethical behavior? Why? Why not? Could you please elaborate?

Q5. Please recall your recent playing experience and answer the question “What have you learned about ethics? Additionally, tell us please what kind of information regarding ethics and morality you received. Is it new knowledge? Or you retrieved it from your prior knowledge?” Could you please describe

Q6. Do you think using this game in ethics learning is useful and beneficial from your point of view? Why? What is the potential of employing this kind of game for ethical learning?

Q7. Do you see or have any challenges or drawbacks in using this game in ethics learning? Could you, please, elaborate?

Q8. Could you please evaluate this game? Give some feedback and suggestions for improvement in terms of suitability for learning ethics.

Q9. Anything else?