The BRIDGE Framework

Balancing Responsibility, Inclusivity and Design for Gamified Education

Checkmates

Anne Olsthoorn, Anna Piitulainen, Giang Tran & Heta Virkki

Abstract. *This paper proposes a framework for ethical and inclusive use of gamification in education. Design effectiveness in education is crucial to ensure equitable, positive and impactful learning experiences. To this end, we developed a set of guidelines intended to balance ethical responsibility, inclusivity, and design effectiveness within gamified learning environments. The framework has been developed through literature-based synthesis of research in gamification, education design, and accessibility. By analysing and combining principles from ethical and inclusive design together with motivational theory, the resulting* ***BRIDGE Framework*** *(Balancing Responsibility, Inclusivity, and Design for Gamified Education) integrates these domains to promote motivation without manipulation or engagement coercion. It offers practical guidance for educators and designers to ensure gamified learning environments are both engaging and equitable.*

Keywords: Gamification, Education, Inclusive Design, Accessibility

1 Introduction

Gamification has rapidly expanded across diverse fields, yet a consistent approach for its responsible use remains underdeveloped. Since the term gamification has become more widely used, it has been implemented to motivate users in a variety of ways and in many different contexts. One such context is education, where the theories are used to enhance student engagement and motivation (Christopoulos & Mystakidis, 2023; Dichev & Dicheva, 2017). Gamification, as defined by Huotari and Hamari (2012), is "*the use of game design elements in non-game contexts*". In education, gamification moves beyond business or entertainment applications and functions as a pedagogical strategy, one that shapes motivation, participation, and equity in learning. However, one must be careful in implementing gamification as it can be misused to manipulate and cause harmful behaviour (Al-Msallam et al., 2023). To design a meaningful and usable education tool, one must carefully consider both the ethical and inclusive implications, ensuring that the widest range of people can use the tool. Although some tools and frameworks exist that attempt to help designers create meaningful designs, a synthesised approach that incorporates both ethical and inclusive elements does not yet exist. This paper develops guidelines for ethical and inclusive gamification design in educational contexts. Drawing on literature from gamification, educational design, and accessibility studies, we synthesise key principles into a cohesive framework for designers. Before outlining these guidelines, we first examine

how gamification has evolved across educational and commercial contexts and the challenges that have emerged in its implementation.

2 Background

Gamification originated as a strategic tool in business and product development (Lee & Hammer, 2025). It has since expanded into various sectors including education (Dicheva et al., 2015). According to Market Data Forecast (2024), the global gamification market size is estimated to rise at an impressive compound annual growth rate (CAGR) of approximately 36.4% from 2024 to 2033. Top companies leading the game-based learning markets include Duolingo, Kahoot!, Quizlet, Pearson… (MarketsandMarkets, 2025).

Modern blended and online learning environments, which are becoming increasingly common in higher education and lifelong learning, have benefited greatly from gamification (Seaborn & Fels, 2015). Digital technologies have empowered the adoption of gamification in educational settings, and the COVID pandemic has accelerated digital transformation with increased demand for interaction and engagement (Sadovets et al., 2022).

Notwithstanding its potential, gamification presents ethical and inclusivity challenges caused by a strong focus on competition, data privacy concerns, or exclusion of students with diverse profiles (Seaborn & Fels, 2015).

Quality education is among the 17 sustainable development goals (SDGs) of the United Nations, to be completed by 2030. The education goal's emphasis is to "*ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*" (United Nations, 2023).

Despite its importance, thoughtful design in gamification has received insufficient attention (An, 2020). Therefore, it is essential to propose a set of ethical and inclusive gamification design guidelines to ensure equity, accessibility, and learner well-being (Kim & Lee, 2015; Park et al., 2019; Rutledge et al., 2018).

3 Methods

For this essay, a literature review was used to explore existing frameworks and methods related to education, ethics and inclusive design. The aim was to identify gaps and opportunities in existing research and develop a practical framework that guides designers to create ethical and inclusive gamified educational materials and platforms.

The literature review was conducted in three phases. The process started with an initial review of literature related to various topics such as education, ethics, gamblification and storytelling within gamification. Following the initial literary research, it was decided that the focus would be on ethics and education. In addition, inclusivity and accessibility were to be included as sub-themes regarding the ethics aspect.

In the second phase the team did further research into the existing literature within the chosen overall focus area. Findings were then compiled on a Mural board, where

more specific themes were identified within the categories of education design, inclusive design, ethics and accessibility.

In the third phase of the literature review, each team member researched one category and its specific themes to gather information for the basis of a new design framework. From the information found, central and recurring themes were identified and synthesised for each category. Finally, the findings were compiled into a set of design principles for the proposed framework for responsible gamification design in education.

4 Literary review

This chapter goes over the literature review findings that were used to inform the development of the proposed framework.

4.1 Gamification design in education

Gamification in education, at its core is about increasing (intrinsic) motivation and student engagement. The most popular used tools for gamification, such as points, badges, leaderboards (PBL), can only reach extrinsic motivation (Dichev & Dicheva, 2017). Intrinsic motivation, according to Serice (2023) can be reached by competence, usefulness, tension reversed relatedness, importance, choice and enjoyment. Popular theories associated with gamification, such as Self-Determination Theory (SDT) (Deci & Ryan, 2000) and Flow Theory (Csikszentmihalyi, 1991), align with these ideas. SDT aligns with fostering intrinsic motivation in students, while Flow Theory supports sustained attention in learning tasks. The theories complement each other by stressing the balance between learners' skills and the perceived degree of task difficulty to ensure deep engagement and enjoyment of educational activities (Antonaci et al., 2017; Kim & Lee, 2015).

Complementing psychological theories, design-focused models have also guided gamified learning. Gee (2003) argued that educators can learn from good computer and video games to create more inclusive learning environments. This was supported by the Mechanics, Dynamics, and Aesthetics (MDA) framework for game design elements introduced by Hunicke et al. (2004). The framework is crucial for design analysis, allowing designers to understand how mechanics lead to motivation and engagement and how to utilise player's perspective to refine their work.

A further development built on behavioural science is Chou's Octalysis (2014) that presents a "human-focused design" model for designing gamified experiences and can be applied to any target audience. The framework emphasises the eight Core Drives (CDs) of human motivation to be considered in the design process to help designers create engaging and enriching experiences in non-game contexts. The Octalysis directs designers to move beyond simple PBLs and develop gamified systems to address diverse needs and intrinsic drivers of users.

With the same motivational and behavioural approach in designing gamified education, we can look to the practical five-step process by Huang and Soman (2013) that integrates game elements into learning experiences, the key in this process is to understand the users and tailor to their needs.

In addition to motivational and behavioural approaches, inclusive design philosophies such as Universal Design for Learning (UDL) provides guidance for accessibility. This framework got its origins from Universal Design (UD) and applies its philosophy of considering all potential users' needs from the outset, within educational programs (Pisha & Coyne, 2001). Tools such as varied engagement methods, different difficulty levels, and inclusive assessments help create an environment where many different users can learn effectively (Pisha & Coyne, 2001). Some criticism for these universal approaches exists however, as there is some ambiguity around its implementation a lack of theoretical guidance and there being a danger of using a one size fits all approach (Mustaquim, 2012; Zhang et al., 2024).

Additionally, unlike previous generations who studied in traditional teaching modes, millennials prefer to learn through collaboration, entertainment, technology and experiential activities that allow instant feedback for error correction (Gupta & Goyal, 2018). Therefore, to achieve learning outcomes, educators should employ active teaching methodologies and technologies as educational support tools (Akerson et al., 2018). Common gamified elements, such as PBL and immediate feedback, enhance engagement and learning outcomes by emphasising meaningfulness and social connection (Gupta & Goyal, 2022; Sailer & Sailer, 2021). However, studies by Rutledge et al. (2018) and Sailer & Sailer (2021) discussed that gamification should be purposefully aligned with specific learning outcomes, not just added for engagement. Additionally, according to Cognitive Load Theory (Sweller, 1988), unnecessary complexity in design can overwhelm learners' working memory and hinder comprehension. A consistent and simple interface helps learners focus on the actual learning content rather than navigation or mechanics.

While these frameworks and theories clarify how gamification can engage and motivate learners, they also highlight the need to consider its ethical and inclusive dimensions.

4.2 Ethical considerations

The literature on gamification frequently discusses the issue of manipulation (Kim & Werbach, 2016; Marczewski, 2017; Nyström, 2021; Toda et al., 2018). However, gamification in education aims to enhance learning and support intrinsic motivation without causing any intentional harm (Christopoulos & Mystakidis, 2023). Marczewski (2017) highlights that gamification is a tool whose effects depend on the designer's intentions and decisions. Therefore, gamification itself is not ethical or unethical, but the way it is used determines the outcome. The same mechanics that can motivate and engage can also be misused to manipulate.

Other concerns identified in the literature include harm (Kim & Werbach, 2016), exploitation (Benner et al., 2022; Kim & Werbach, 2016), and privacy breaches (Benner et al., 2022). Among these, harm – especially psychological harm – is closely linked to education, as it can directly affect learning. Psychological harm involves unpleasant emotions, such as stress, anxiety, or frustration. Some game elements may more easily lead to negative emotional impacts than others (An, 2023). Moreover, individual characteristics such as personality traits (Smiderle et al., 2020) or cognitive abilities (Smith & Abrams, 2019) have been shown to influence the psychological effects of gamification.

Addiction is another potential problem in gamified learning environments (Andrade et al., 2016; Nyström, 2021). Andrade et al. (2016) express their concern about incorporating game-like experiences into education, as these might create dependency between the learner and gamification features. Consequently, learning without gamified elements could feel challenging. Nyström (2021) reminds us of the designer's responsibility to acknowledge the relationship between addiction and gamification mechanics to protect users.

Although exploitation and privacy are not the focus of this essay, along with other ethical concerns, they highlight the importance of transparency, user autonomy, and fairness in gamified learning environments. Transparency means clearly communicating the system's intentions, goals, and persuasive techniques to users, ensuring they understand how the system operates and affects them (Marczewski, 2017). Clarity about the system is crucial to prevent potential manipulation and to help build user's trust (Benner et al., 2022). Open communication about learning objectives, teaching methods, expectations, and grading criteria is fundamental in all forms of education and should also be applied in gamified learning environments (Christopoulos & Mystakidis, 2023). This enables students to understand the learning process better and make conscious decisions about their learning, thereby supporting autonomy.

User autonomy refers to giving users the power to choose how they use the system and make their own decisions (Benner et al., 2022). It is not only ethically important but also enhances students' motivation and engagement (Deci & Ryan, 2000). Fostering user autonomy ensures a sense of freedom of choice, which Marczewski (2017) underlines as a central principle in ethical thinking. In educational environments, autonomy can be supported by allowing students to choose how they interact with the learning system or progress along their learning path. Sufficient autonomy should be provided based on user's needs, as in some situations fewer choices may be more beneficial than many (Benner et al., 2022). In education, a certain degree of guidance is necessary to balance autonomy and support effective learning. Any limitations to users' autonomy should, however, be clearly communicated.

Transparency and user autonomy are practices that promote fairness. Thus, all three concepts are interconnected. In their study, Kim and Werbach (2016) emphasize fairness to prevent exploitation and manipulation. Additionally, fair approach should be kept in mind in order to motivate users (Benner et al., 2022) and ensure student participation (Wang & Degol, 2016). Clear and fair game rules must be established to avoid dissatisfaction, disengagement or even conflict among students (Wang et al., 2016). For example, a fair reward system is crucial in gamified learning environments.

Addressing these core responsibilities during the design process can minimize potential ethical risks and guide designers toward more ethical gamification practices (Benner et al., 2022). Awareness of ethics can also decrease the possibility of creating unethical or harmful systems unintentionally. Furthermore, designers should be aware of their intentions behind the system and consider the potential outcomes for users (Benner et al., 2022; Marczewski, 2017).

4.3 Inclusivity in design

Ethical practices are closely intertwined with inclusivity, as inclusive design can be seen as an ethical design approach for creating fair and accessible learning

environments (Zhu et al., 2020). Through inclusivity we can guide the development of design frameworks that support equitable participation and innovation. This means making products, services, interfaces and environments better for everyone (Coleman et al., 2016). This can be linked to UD or UDL, however, they tend to be too general for an interactive environment (such as games) (Mustaquim, 2012). As such, it should include social and cultural dimensions as well, instead of focussing on usability.

A good way to ensure inclusivity is through co-creation. This method gives a voice to users, ensuring that this will be a design that will actually be used (Suliman et al., 2024). It also builds empathy and accountability among designers by forcing them to step out of the "expert" role and listen to the people they are designing for (Sanders & Stappers, 2008). Moreover, this should be a continuous process, embedded in every phase, with transparent dialogue where everyone has equal input (Schoenmakers & Jukema, 2019).

Accessibility is an integral part of inclusive design in education because it ensures that all learners can access the learning material without discrimination (Zulkifli et al., 2023). While gamifying education can support learning, its implementation can bring about barriers that cause problems for learners with auditory, cognitive, neurological, physical, speech and visual disabilities (Smith & Abrams, 2019).

There are different tools and methods for identifying and removing accessibility barriers. Smith and Abrams (2019) use Web Content Accessibility Guidelines (WCAG) developed by World Wide Web Consortium when highlighting potential accessibility concerns with different gamification features. WCAG is a standard with a set of principles and guidelines that aim to make web content more perceivable, understandable, operable and robust, so that it is accessible to people with disabilities (World Wide Web Consortium, 2024). These principles and guidelines can be used to guide the design of gamified educational content as well.

Yuan et al. (2011) look at accessibility in games from the point of view of interaction, stating that disabilities can impact players' ability to interact with the game on three levels: receiving stimuli, determining response and providing input. Therefore, not considering accessibility in game design can result in complete exclusion, difficulties in playing or a reduced gaming experience for people with disabilities, depending on how critical the barriers are.

As previously mentioned, enhancing student engagement is one of the core reasons for using gamification in education. In-game feedback serves the function of maintaining engagement and the feedback being reliant on one modality can cause accessibility issues (Smith & Abrams, 2019). Feedback may be provided in a form that the player cannot perceive due to disability, and without perceiving it they cannot successfully perform the task (Yuan et al., 2011).

Visual aesthetics is often a big part of gamified experience and therefore alternative ways of conveying that experience may be needed for visually impaired users (Smith & Abrams, 2019). Yuan et al. (2011) also talk about the significance of secondary stimuli that supplements the gaming experience. For example, the absence of sound effects may produce a reduced experience for users with hearing impairments. Even though the ability to play a game does not depend on secondary stimuli, its absence for some users means that equality is not achieved.

Accessibility barriers in determining what action to take in the game based on feedback, typically concern users who have challenges in cognitive functions (Yuan et

al., 2011). Users with low cognitive abilities face problems in recognizing relationships between design elements and the information they provide (Zulkifli et al., 2023). Therefore, the way information is presented and structured requires special attention.

Time-based activities can be challenging to people with neurological, cognitive or physical disabilities (Smith & Abrams, 2019). Users with low cognitive abilities may need more time to determine their response (Zulkifli et al., 2023), whereas those with limited mobility may struggle physically with providing the input within the given time (Yuan et al., 2011). Sometimes assistive technology, such as specialized input devices and software, is needed to help people with disabilities overcome accessibility barriers (McMahon & Tucker, 2025).

It is important to note that accessible design also benefits users without disabilities as they can occasionally be subject to situational limitations due to environmental circumstances or temporary disability for example through injury (Initiative (WAI), 2024).

5 Findings

In the context of educational gamification, six key principles were identified as central to designing engaging, fair, and inclusive learning environments. It is important to note that these principles are interdependent, each reinforces the others. Balance is particularly crucial in education; gamified learning should nurture curiosity and mastery rather than compliance or dependence on rewards. The principles are divided into two domains: Ethical Design Principles and Inclusive Design Principles, which together aim to make gamified education both ethical and inclusive, supporting diverse learners' motivation, agency, and success.

5.1 Ethical Design Principles

Transparency emerged as an essential ethical principle in the reviewed literature. Therefore, in our framework, it is a prerequisite for ethical gamified learning, and we suggest it should be considered as a continuous design principle rather than a one-time action. Designers who act transparently, by acknowledging and communicating their intentions, promote ethical design culture, which in turn enhances the overall transparency of the final system and user's trust. In gamified learning environments, transparency should be embedded throughout the learning process, from explaining goals and mechanics to providing feedback on progress. This furthermore helps connect the activity to the learning goals and aligns gamified rewards with educational objectives.

In practice, communication between the system and the learner is a way to strengthen transparency. This can be implemented through feedback mechanisms, which guide learners without diminishing user autonomy. For instance, learners should understand why specific gamified features exist and how these elements influence their learning. In addition, the feedback mechanism should enable reciprocal communication, supporting both system-to-user and user-to-system interactions. This practice not only supports transparency but also promotes co-creation, which is linked to inclusivity.

The feeling of autonomy supports intrinsic motivation, which ties into the Self-Determination Theory (Deci & Ryan, 2000) and Chou's core drive of Empowerment (2014). It further allows students to take ownership of their learning and engage with the material at their own pace rather than being passively nudged by the system's mechanics. In this regard, autonomy is not only a motivational factor but also a fundamental ethical principle. We include autonomy as a part of our framework, as it appeared repeatedly in the literature on the ethics of gamification (Benner et al., 2022; Kim & Werbach, 2016; Marczewski, 2017).

Together with transparency, autonomy can guide design practices towards fairness. Supporting autonomy ensures that gamified education empowers learners rather than manipulates them. Finding a balance between autonomy and guidance is central in gamified learning systems, as excessive autonomy may lead to confusion, whereas too much control can hinder motivation and raise ethical concerns.

Autonomy can be strengthened through several design strategies: offering choices of learning paths, enabling flexible pacing and providing multiple means of engagement. These strategies promote students' empowerment by offering personalization and adaptability. This is also in line with the Inclusive Design Principles of Accessibility and Adaptability included in our framework. Moreover, encouraging learners to influence or customize their learning environment fosters co-creation, which strengthens both, feeling of autonomy and inclusion.

Fairness in gamification can be seen as a by-product of ethical and inclusive practices. Our framework aims to guide designers towards standards that embed fairness into the design process and thereby improve the experience for all users. In educational context, fairness is important to ensure all learners have equal opportunity to access learning materials, get needed support and succeed. Perceived fairness can impact learning by influencing students' motivation and their willingness to engage with gamified systems, as unfair elements or mechanics can reduce trust and participation. Moreover, it can shape the user experience and thereby influence the consumers' willingness to use the product.

Balance is key in education, as fairness does not always mean treating everyone similarly. Sometimes it means giving learners what they need to succeed, which entails balancing between equality and personalization. In practice, it can mean ensuring that challenges, rewards and feedback are adapted to learners' diverse abilities and needs. Consequently, learning outcomes depend on students' effort and understanding rather than external advantages. In summary, ***reward progress, not perfection***.

5.2 Inclusive Design Principles

The active involvement of diverse users will not only ensure that the design is such that it will be as usable and enjoyable for as many people as possible but will also create empathy and accountability among the designers. Meaning, when students help design or personalise gamified activities they feel and take ownership over their learning and develop reflective skills. Instructors must furthermore decode the target audience's demographic factors and psychological factors, regarding the careful selection of game elements in their designs. This can be achieved through approaches such as co-creation,

iterative design, and refinement based on feedback and diverse user input. These methods help address unintended consequences or exclusion.

Accessibility and adaptability will ensure all users can participate equally, regardless of ability, and that the design adapts to individual needs, preferences and skill levels. This will create a bigger user group, ensuring that the product will be used by more people. Having multiple means of engagement, multimodal feedback, adjustability in task difficulty, flexible pathways and inclusive options for assessing learning will all facilitate learning and create an inclusive environment that fosters the feeling of autonomy. On an inclusivity note, this recognises the diversity of learners' motivations and learning styles, making participating in the teachings both equitable and enjoyable.

Consistency and simplicity should be applied to the design and the functionality of the learning platform. The aim is to reduce unnecessary complexity and distraction, which will improve usability and reduce cognitive load. This benefits all learners, but especially those with low-cognitive abilities ensuring that they can also engage. Consistency and clarity in instructions, cues for progress, navigation, feedback and reward system all help decrease cognitive load and prevent confusion, which will help with maintaining motivation.

6 Discussion

Building on the ethical and inclusive design principles identified in our findings, we propose the **BRIDGE Framework:** Balancing Responsibility, Inclusivity and Design for Gamified Education (Figure 1). This framework integrates central themes from ethics and inclusivity into a unified model, tailored to educational contexts. The BRIDGE Framework aims to connect ethical awareness and inclusive design with practical pedagogical strategies, providing educators and designers with a structured, flexible, approach for implementing gamification responsibly.

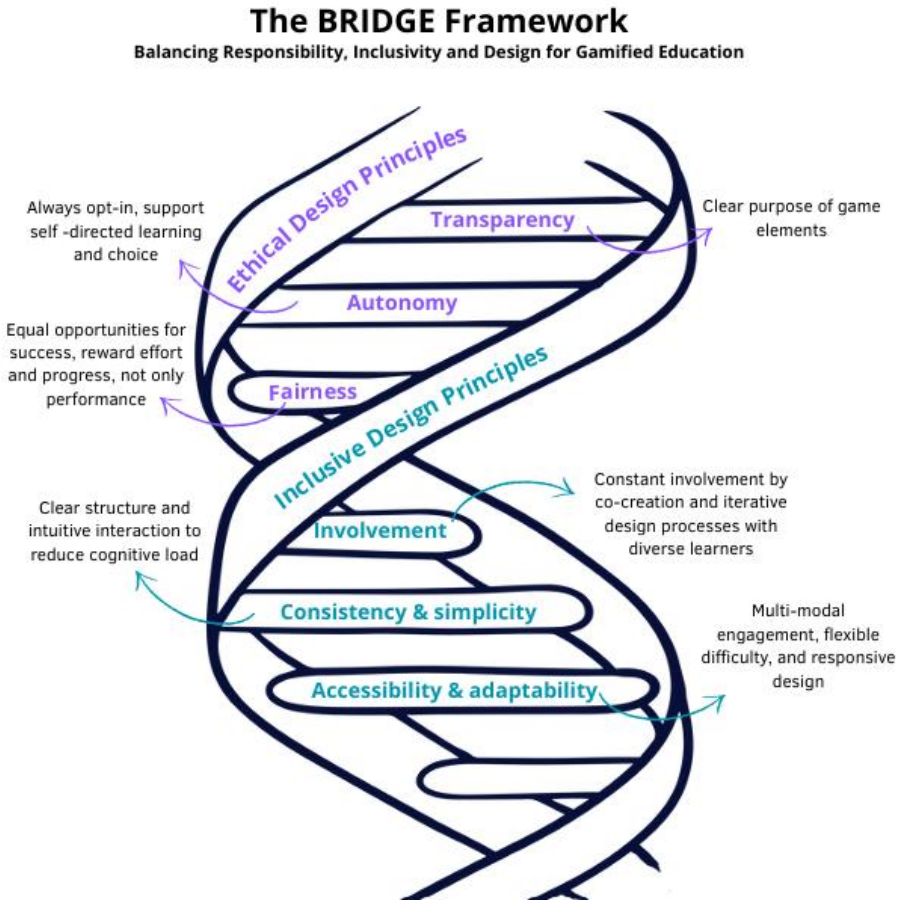

Figure 1. The BRIDGE Framework.

6.1 Existing models vs. BRIDGE

To understand the contribution of the BRIDGE Framework, it is helpful to compare it with existing models such as Universal Design, Octalysis, and ethical gamification frameworks. While existing frameworks such as Universal Design for Learning (Pisha

& Coyne, 2001) and ethical gamification models (Al-Msallam et al., 2023; Chou, 2014; Huang & Soman, 2013) provide valuable foundations, they tend to address inclusivity, ethics and motivation separately. Our framework bridges these domains by integrating them into a single, cohesive structure tailored specifically for educational gamification.

Furthermore, the framework offers actionable design principles instead of abstract ideals that one would not know where to begin with when implementing them into their design. It is a model that is not generic but rather specifically designed for learning environments, focussed on engagement, equity and student's agency. To showcase how this framework might be put to use, the next section presents an example of applying it to a digital course on DigiCampus, a shared learning platform for Finnish higher education institutions including Tampere University.

6.2 Example Scenario: Applying BRIDGE to DigiCampus MOOC

The massive Open Online Course, or MOOC, on "Introduction to Sustainable Digital Life" is taken by a variety of learners around the world with diverse backgrounds and abilities. Let's see how the BRIDGE Framework could be used for further ethically implementing gamification in the course's contents.

The course design team can first enhance engagement with gamification to keep learners motivated during the learning process. Currently, most of the content is in PDF format with bullets, but interactive slides would make the learning material more engaging. The course also starts with the self-introduction of learners, this space can be used to further engage students with, for example, PBL features. **Transparency** is important here, there should be clear explanations on how these PBLs correspond to specific learning milestones, in order to make students understand that gamification encourages learning rather than competition.

With different motivations and levels of prior knowledge, learners should be given certain choices, or **autonomy,** in the course. They should be able to choose or customise their learning pathways: a "project track" for those wanting practical application, a "theory track" for foundational understanding, and a "hybrid track", mixing these approaches, for example. This **adaptability** will further enhance the engagement and **accessibility** of the platform.

Adaptability can be embedded by personalised feedback dashboards and optional missions or challenges for advanced learners to earn more credits or improving grades, while beginners can receive additional guidance or examples for a deeper understanding of the intended topics.

Moreover, the current course lectures with slides and bullets can interfere with reading comprehension, which is a potential issue for visually impaired learners. **Accessibility** can be achieved with video and audio lectures including transcriptions to complement the slides, which now introduce the topic but don't explain the slides in detail. Course designers should also be mindful of low-bandwidth versions of videos to support global learners with varied technological conditions.

Fairness could further be promoted through diverse assessment formats. Where at the moment, the assessments are mostly lengthy essays one could add options such as quizzes, discussion posts, short videos, or written reflections. This would allow diverse learners to demonstrate competence effectively. Learners should furthermore be given

personalised and constructive feedback on their submitted assignments, moving further than the simple numerical or pass/fail grades. Notifications of these evaluations should also be delivered in a timely and explicit manner, replacing the currently silent grading approach.

Finally**, consistency and simplicity** would appear in a form of clear language in exercise feedback and instructions. It is also important not to overwhelm the users with too much information, particularly in texts.

This example demonstrates how the BRIDGE Framework can be woven through the material rather seamlessly throughout educational design. This showcases that the principles can be applied in many different contexts. Through BRIDGE, the MOOC becomes both engaging and inclusive, motivating participation while respecting diverse learning needs and contexts, and eventually increasing completion rates through gamification.

6.3 Limitations and future considerations

In our work, accessibility received more attention than other aspects of inclusivity such as socioeconomic status, different learning styles or special needs of other demographics. The decision to focus on accessibility for users with disabilities was made, because it is one of the most critical aspects of inclusive design where major barriers exist. Additionally, covering other aspects of inclusivity more extensively would have made the scope too broad for this assignment. Furthermore, design choices that are made to help people with disabilities benefit many other users as well. Children, whose cognitive skills are still developing have weaker reasoning abilities (Zulkifli et al., 2023), therefore they benefit from design choices made for users with cognitive disabilities. Learners with weaker language skills can better understand instructions that use simpler vocabulary and language structures. Users who experience decline in sensory abilities due to aging benefit from a system that can be adjusted and adapted to suit their changing needs.

Challenges exist in implementation of accessibility and adaptability in a practical way. Accommodating different needs, learnings styles and preferences requires a lot from the system and its design. Zairon et al. (2025) suggest that integration of artificial intelligence (AI) could be used for this purpose. According to them, in an adaptive system the content and game elements could be modified based on real-time data about a user, which would lead to a more inclusive and optimized learning experience. They state that while competition elements can motivate some users, for others collaborative tasks may be more effective.

More research is needed to find out how AI can support learning through adaptability. This includes whether it can be applied to adapting the interface for users with disabilities not just game elements and the content of the learning material. Zairon et al. (2025) also point out that overly personalized experiences could make the system too complex and less accessible. Therefore, balancing personalization with consistency is important. Moreover, if AI is used, it can bring about more ethical concerns related to data privacy and security. Additionally, even though the goal with gamification in education is to increase motivation and engagement of learners, a highly personalized and optimized system could result in addictive use. Including features to mitigate this

risk may be needed, such as tracking of usage time, setting time limitations for the use and reminders to take breaks (Shrivastava et al., 2025).

7 Conclusion

This essay set out to explore how ethical and inclusive design principles can guide the responsible use of gamification in education. Drawing on literature from ethics, inclusivity, and accessibility, we proposed an integrated framework that promotes effective learning while safeguarding learning well-being.

Ultimately, the findings highlighted that transparency, autonomy, and fairness serve as the ethical foundation for responsible gamification. Inclusivity, accessibility and adaptability ensure an equitable and motivating learning environment for all. These principles each emphasise balance in each step. Unlike previous frameworks, which often address motivation, ethics or accessibility in isolation, our approach unites these perspectives into a single structure tailored specifically for educational gamification. The framework moves beyond the abstract and gives actionable design principles aligned with learning strategies.

Future research should test this framework through practical implementation and explore how emerging technologies such as AI-driven adaptability could enhance the framework. The ethical principles should remain at the centre of this process, evolving alongside technological and pedagogical innovation.

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Group Responsibilities

Every member wrote for the body of the essay (literary review). Every member had their own subjects they were responsible for; this continues for the findings. Each member furthermore did spelling and grammar checks on the whole document. The workload was equally divided.

Group Members	Main responsibilities	Main subjects
Anne Olsthoorn	Essay direction and outline; content control; Ensuring compliance with task's instructions	Inclusivity
Anna Piitulainen	Findings	Ethics
Giang Tran	Background; findings; discussion	Education
Heta Virkki	Methods; discussion	Accessibility