

# **Applying Gamification Techniques to Enhance User Engagement Toward Metaverse as A Virtual Learning Platform**

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## **ABSTRACT**

Gamification has become an integral part of modern life, deeply intertwined with advancing technology and digitalization, impacting various user activities. The rising prominence of the Metaverse has ushered in a new era of immersive online interactions, where users can meet, collaborate, and engage for various social purposes. Building on the Cognitive Evaluation theory, this study explores how gamification affects user engagement in the Metaverse, a relatively under-researched area. The research employs a mixed-method approach, gathering data through focus groups, interviews, and surveys with students and educators in UK higher education. The aim is to contribute to academia and the education industry, addressing a gap in the current literature. This study reveals the crucial role of gamification mechanics in shaping intrinsic motivation, fulfilling user needs, and enhancing engagement.

**Keywords:** Metaverse, Gamification, User engagement, Virtual learning, Higher Education, UK

Track: Innovation

## 1- INTRODUCTION

Digital disruption has a significant impact on the economy, culture, and education in the modern period. The UK Ministry of Education has clearly outlined its commitment to developing the educational technology system in its recent Strategic Action Plan (2020–2022). The main objective is to increase the number of learning opportunities by using digital technology in the teaching process. These digital platforms seek to provide adaptable learning environments, acquaint students with technology, improve their skill sets, and promote the use of digital tools in education (Office of the Permanent Secretary Ministry of Education, 2020). However, the COVID-19 epidemic has had a major influence on the educational environment, requiring modifications to teaching practices such as reducing the number of in-person classrooms and implementing social distancing techniques. As a result, digital technology is now more urgently needed in school administration. Technology makes synchronous and asynchronous learning experiences possible, enabling students to interact with their teachers and other students at any time and from any location (Dhawan, 2020).

The Metaverse is a special place in the always-changing digital world where individuals may interact and take part in virtual and real-world activities in a variety of fields, including education. As the Metaverse is a network of interconnected experiences, apps, devices, tools, and infrastructure, it has the potential to completely transform education and skill development. It creates an engaging atmosphere for learning that encourages communication, amusement, drive, curiosity, and self-expression (Khansulivong, Wicha, & Temdee, 2022). Students may customise their avatars in this immersive environment to fit their personalities in a variety of situations. There has been a significant growing interest in the idea of gamification in non-gaming contexts of Metaverse, especially in educational settings (Dominguez et al., 2013; Seaborn & Fels, 2015). This strategy is used in educational institutions to increase student involvement (Hanus & Fox, 2015). According to Deterding et al. (2011), gamification is the application of design concepts and gaming elements in non-gaming contexts with the goal of combining intrinsic and extrinsic motivation to encourage motivation and active participation (Mishra & Kotecha, 2017; Muntean, 2011). Gamification, or the incorporation of gaming concepts, styles, and features into a variety of educational situations, is another cutting-edge technique in education. It makes use of gaming-derived motivating strategies to boost student involvement and motivate them to actively pursue learning goals (Yamani, 2021). Students may learn as they play through gamification, which frequently takes the form of simulations.

Even though gamification is widely believed to have benefits, assessments of its effectiveness have frequently produced conflicting and occasionally negative findings (Burke, 2005). Specifically, the lack of a thorough theoretical framework has limited our understanding of how gamification techniques successfully engage people in a virtual environment. In order to fill in these knowledge gaps, the main question this project aims to answer is: Is it possible to improve user engagement in a virtual learning environment inside the Metaverse with gamification? In order to achieve this goal, this research builds a theoretical framework that uses gamification strategies and the cognitive evaluation theory (CET) to forecast user involvement in the Metaverse (Deci, 1975; Ryan and Deci, 2000). According to CET, people have basic psychological requirements that must be met when engaging in different activities. These needs include relatedness, competence, and autonomy. People are more intrinsically motivated and enjoy their activities more when these requirements are met, which leads to increased participation in those activities (O'Brien and Toms, 2008). Since the main goal of gamification is to foster voluntary,

high-quality motivation, CET is a useful paradigm for understanding user involvement in the Metaverse's educational setting. Using CET as a thorough theoretical basis, this study develops and evaluates a model intended to look at how game features affect users' psychological requirements being met, which in turn leads to higher levels of user involvement and enjoyment. The research will be conducted by using a mixed method, and data will be collected from students and educators in UK Higher Education through a series of focus groups, interviews, and surveys.

This research strives to add value to academia and the education industry, and those practitioners working on students' and educators' behaviour, intention, and engagement to utilise new tools to improve their performance, experience, and pedagogical strategies. It is expected to find gamification in Metaverse as an effective method for learning and teaching in higher education. It is anticipated to find out that gamification will motivate students to get more engaged, and spend more time learning and socialising with other students. Also, one of the other expected contributions of this research is to close the extant gap in the literature and add to prior studies by showing how gamification mechanics are key to influencing intrinsic motivation, needs satisfaction, and user engagement.

## 2- LITERATURE REVIEW

### 2.1 Metaverse in Education

Metaverse has several potential uses in education where students and educators can interact with others and effectively learn, teach, and experience new things. Even in those circumstances where students may not be able to have the experience that they would have in face-to-face teaching, Metaverse can be used for learning or practice. For instance, past research (e.g., Chien et al., 2020) suggested placing students in VR's authentic surroundings for language acquisition in English as a Foreign Language (EFL) courses. The goal of language learning, however, is to enable EFL learners to have a different life—a living environment where they can use English for working, learning, socialising, and entertainment, just as if they were native English speakers. That is why Metaverse could be highly effective, as it views it as more than a course or a learning activity.

Metaverse in teaching and learning activities can offer several advantages and have a critical impact on the educational process by presenting worthwhile learning possibilities. For example, Metaverse's ongoing technological and cultural developments have the potential to transform both traditional and online learning in novel ways (Abeles, 2007). The ability to construct immersive, adaptable, scalable, diversified, and interactive learning environments with Metaverse can boost students' motivation, active participation, and engagement as well as encourage collaborative and hands-on learning (Tarouco et al., 2013; Vaca Barahona et al., 2016; Diaz, 2020). These environments can also produce high-quality synchronous learning experiences because they support effective learning, aid in the removal of social and identity barriers, improve students' soft skills (Nurhidayah et al., 2020), creativity (Garcia, 2011), and overall communication and interaction (Vaca Barahona et al., 2016). It is important to note that even though students may initially have some technological challenges, they can quickly become familiar with Metaverse and its different aspects because they are used to using digital devices and media. This along with the fact that Metaverse is game-like (Schaf et al., 2012), gives studies the chance to practice their skills in real-world situations (Schlemmer et al., 2009), and the chance to participate in interactive

problem-solving activities (Clark, 2009), are the main reasons why using Metaverse in education is well-received by students.

## **2.2 The Application of Gamification in Education**

Games have always been an essential component of human civilization, providing entertainment. Though their structure and technology have changed significantly over time, games have managed to hold onto their eternal appeal. Today, a variety of game-based approaches have been shown to be successful in improving the learning process, including simulation games (Casile et al., 2021; Palmunen et al., 2021; Wei et al., 2022), serious games (Lo'pez et al., 2021; P'erez-P'erez et al., 2021), and game-based learning (Lew & Saville, 2021; Ortiz-Martínez et al., 2022). Among these strategies, gamification has stood out as one that is especially significant. The term "gamification" was first used in 2011 by Deterding et al. (p. 10), who defined it as the "utilisation of game design elements in non-gaming contexts," highlighting these characteristics as the core elements of gamification. According to Forbes (2022), gamification has been more popular in recent years, and it is expected to increase exponentially over the next five years. Since it is thought to improve motivation and speed up learning by using components that are often present in games, gamification has made a name for itself in the field of education.

The research highlights a clear trend in the field of education. Indeed, gamification is being used more frequently as a powerful tool for creating incredibly engaging learning experiences (Zainuddin et al., 2020). Several studies (e.g., Baydas and Cicek, 2019) have demonstrated that adding game components to the classroom makes learning more engaging and increases student engagement with gamified courses. According to Zainuddin et al. (2020), there is a consensus that gamification enhances learners' motivation, engagement, performance, and overall learning experience. Within the last decade, there has been significant growth in the field of gamification research (e.g., Koivisto & Hamari, 2019; Seaborn & Fels, 2015), not least because of the theoretical advances (Landers, 2014; Liu et al., 2017) and improvements in conceptual frameworks (Huotari & Hamari, 2017; Leclercq et al., 2020).

## **2.3 Gamification in E-learning**

The popularity of e-learning has increased dramatically, and many students are using online platforms to obtain inexpensive education (Ding, 2019). In contrast to the typical school structure, this form of education allows students to engage with learning materials and knowledge-sharing in a way that gives a culturally varied and personally personalised learning experience (Hassan et al., 2019). The ultimate goal of education is to motivate learners to enrol in classes and take an active role in their education (Hanus and Fox, 2015). Classrooms frequently use incentive programmes to encourage student involvement and commitment through mechanisms like attendance and participation in order to achieve this goal (Kyewski and Kra'mer, 2018). However, these strategies for participation don't always fit well with the special e-learning features, such as the social and cultural dimensions (Pankiewicz, 2016).

Gamification has become a new educational strategy to improve the effectiveness of dynamic learning and integrated learning (Yildirim, 2017). Gamification is the technique of incorporating game aspects into the curriculum to increase student engagement. This method is becoming more and more common due to the growing interest in games, especially in educational settings (Toda et al., 2019). According to Robson et al. (2015), there are three main reasons why gamification is

becoming more popular in a variety of industries. First off, more knowledge about game design and player motivation has been gleaned via the growth of the computer game creation sector. Second, the way businesses interact with customers and produce immersive experiences has changed as a result of the widespread use of social media, cell phones, and websites. Finally, governments and businesses are looking for new and creative ways to influence consumer behaviour and communicate successfully. Despite the benefits of e-learning and gamification, some students may find it difficult to switch from conventional to digital instructional materials if they lack confidence or experience with e-learning (Bachtiar et al., 2018). As a result, innovative teaching strategies—such as gamification—are being used all around the world to meet the varied requirements of students and give them chances in a variety of settings (Dastjerdi, 2016). This pattern demonstrates the increasing importance of gamification in the e-learning space (Urh et al., 2015).

Furthermore, it has been demonstrated that gamification in e-learning improves the educational process and satisfies the needs of the present generation, as noted by Khaldi et al. (2023), Tayal et al. (2022), Behl et al. (2022), Alsadoon et al. (2022), and Saleem et al. (2022). Nonetheless, there is still a shortage of gamification techniques and appropriate platforms that concentrate on content gamification, which is a developing field of study in higher education e-learning. According to Swati et al. (2023) and Agustini et al. (2023), the importance that technology plays in enabling human engagement in virtual worlds also highlights the increasing need for eco-friendly hardware-compatible software, high-bandwidth internet connections, and a smooth user experience. Gamification and metaverse have the potential to work together to improve e-learning and create a bridge across cultural divides.

## **2.4 Intrinsic Motivation in Gamification**

Deci (1975) defined intrinsic motivation as the pursuit of an activity by an individual because they find it to be purely fulfilling and enjoyable. According to Deci and Ryan (1985), people who possess intrinsic drive behave freely while being subject to outside pressures or without pecuniary benefits. According to Ryan and Deci (2000, p. 56), "engaging in an activity for the inherent gratifications it offers, rather than for external, separable outcomes" is the core of intrinsic motivation. In line with this concept, Kuo and Chuang (2016) define intrinsic motivation as people's inclination to engage in pleasurable and intrinsically fascinating activities. Numerous intrinsic motives have been used in the exploration of how gamification mechanisms affect user engagement in an online environment. For instance, Feng et al. (2018) show how point-based incentives and feedback systems may raise problem solvers' engagement levels. In addition, it is suggested by Hammadi et al. (2017) that gamification elements such as challenges, win-loss dynamics, and fantasies increase user satisfaction and, as a result, increase user engagement with the gamified processes. According to Zhang (2008), a system design that considers cognitive demands can support a user's desire for competence and accomplishment, which will boost engagement.

This research proposes that providing users with a means of augmenting their self-efficacy might encourage their engagement with Metaverse platforms. More specifically, gamification techniques that satisfy users' demand for self-efficacy might be a trigger for increased engagement. When it comes to psychological demands, people are drawn to systems that, by nature, offer channels for self-expression and individuality in self-presentation. This involves promoting and aiding in the development and expression of an individual's sense of self

## 2.5 Cognitive Evaluation Theory

The cognitive assessment hypothesis was first presented by Deci (1975) to explain how external cues affect intrinsic motivation. The psychological demands that underpin changes in intrinsic motivation are the main focus of this theory. Deci and Ryan (1985) developed the cognitive evaluation theory, which focuses on the socio-environmental elements that support or contradict intrinsic drives. Their approach highlights three basic psychological needs—autonomy, competence, and relatedness—that serve as catalysts for self-motivation. When embarking on a task, autonomy is defined by a sense of willingness and volition (Gagne & Deci, 2005; Ryan & Deci, 2017), which encourages a sense of initiative and ownership (Ryan & Deci, 2020). According to Niemiec and Ryan (2009), this desire for autonomy means acting in a way that is motivated by reflective self-endorsement; meaning that autonomous people voluntarily devote time and effort to their work. Conversely, competence relates to the sensation of effectiveness (Gagne & Deci, 2005; Ryan & Deci, 2017) and can result in a feeling of mastery, achievement, and personal development (Ryan & Deci, 2020). The experience of effectively carrying out behaviours is the foundation of competence (Niemiec & Ryan, 2009). For example, people frequently experience a sense of competence when they effectively accomplish their responsibilities and overcome obstacles. Finally, relatedness promotes a feeling of belonging and interpersonal connection and includes a connection with others (Gagne & Deci, 2005; Ryan & Deci, 2017). According to Niemiec and Ryan (2009), the urge for relatedness encourages internalisation since people are more likely to accept and internalise the beliefs and behaviours of those they identify with or seek to be connected to. This happens in environments where people feel like they belong. To put it simply, satisfaction with relatedness, competence, and autonomy leads to emotions of enjoyment and intrinsic motivation, which in turn increases participation in a variety of activities (O'Brien & Toms, 2008).

Gagne and Deci (2005) claim that under some circumstances, the three psychological demands may be nurtured, which increases intrinsic motivation through outside factors. According to Sørensen et al. (2009), these psychological demands have a substantial influence on how intrinsic motives are shaped, which in turn affects the desire to continue using Internet technology. Przybylski et al. (2010), on the other hand, establish that intrinsic incentives are reinforced by reward systems. Expanding upon this notion, Kapp et al. (2014) suggest that the incorporation of game-like dynamics may enhance the intrinsic desire to engage in activities by aiding in the fulfilment of these psychological requirements. Similar to this, Proulx et al. (2017) suggest that when people's psychological requirements are met, playing games fosters intrinsic incentives.

By using this theory, this research can explain how gamification would result in students' and educators' engagement in the virtual learning platform of Metaverse.

## 3. RESEARCH FRAMEWORK

Grounded in Cognitive Evaluation Theory, the research framework is presented in Figure 1.

### 3.1 The effects of a platform's gamification Mechanics on needs satisfaction

**Point rewarding-** According to Liu et al. (2011), in a points-based system, users gain points by participating in tasks and successfully finishing them. Usually used as indicators of success and

advancement, points are meant to promote healthy competition and self-efficacy (Hamari & Koivisto, 2013, p. 105). Suh et al.'s (2018) research lends credence to the idea that incentives provide a recurrent sensation of achievement. Moreover, Przybylski et al. (2010) highlighted that users' perceived competence increases in proportion to the incentives they receive through points. Deci et al.'s (1999) observations indicate that point-based incentives have also shown promise in raising users' feelings of autonomy. Gamified systems allow users to distribute their points in whatever way they see fit, which strengthens their sense of self-governance. Points also provide mobility, tactics, task selection, and goal pursuit flexibility, which effectively converts incentives into a feedback system that reflects user choices. In light of these considerations, this study advances the following hypotheses:

H1a: Points-based rewards positively influence competence on a gamified virtual learning platform.

H1b) Points-based rewards positively influence autonomy on a gamified virtual learning platform.

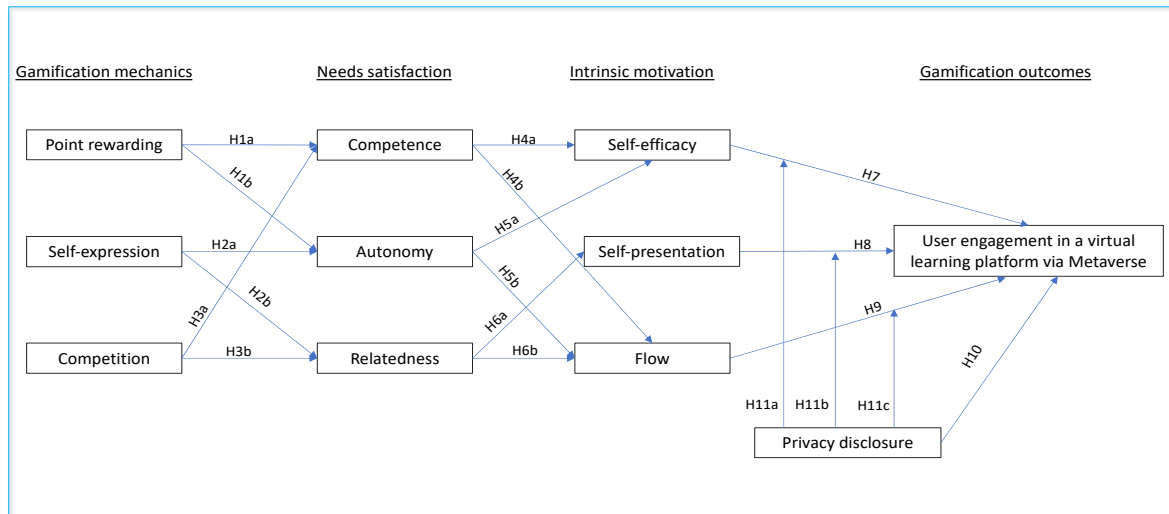


Figure 1- The Research framework

**Self-expression-** Through the unique personas, when users interact with a gamified platform self-expression is made visible. Users frequently utilise distinctive signatures or symbols to distinguish themselves from others, as Ma and Agarwal (2007) claim. Additionally, as noted by Suh et al. (2018), they can receive presents, gain virtual goods like prizes, or make direct transactions with real money. These systems are now standard on gamified websites, acting as instruments for users to identify and showcase themselves. Self-expression helps users develop their own personalities and styles (Suh et al., 2018), which in turn increases their sense of autonomy (Simoes et al., 2013). Users can interact more fully with others by expressing their feelings and emotions through virtual objects, such as emoticons (Hamari et al., 2014). With these newfound understandings, the research puts forth the following hypotheses:

H2a: Self-expression positively influences autonomy on a gamified virtual learning platform.

H2b: Self-expression positively influences relatedness on a gamified virtual learning platform.

**Competition-** According to Suh et al. (2018), competition acts as a motivator, encouraging users to push one another to achieve the best results possible in a variety of activities. Leaderboards are essential for showing outcomes and recognising winners. Whether a game is played in single-player or multiplayer mode, the core of gaming is always the competitive need to achieve certain goals. Comparing users' performances increases how much fun they have with the activity. Research in psychology (Ryan and Deci 2000) emphasises that people often do better in situations where there is competition. One may also view competition as a type of interaction. Taking these factors into account, this research proposes the following hypotheses:

H3a: Competition positively influences competence on a gamified virtual learning platform.

H3b: Competition positively influences relatedness on a gamified virtual learning platform.

### **3.2 The effects of needs satisfaction on intrinsic motivation**

As highlighted by Suh et al. (2018), cognitive evaluation theory postulates that people have an inherent drive for a certain task because they need to feel competent, autonomous, and connected to others. According to Kong et al. (2012), intrinsic motivation is the desire to partake in activities that are pleasurable, enhance one's competence, and support self-determination. People are more likely to feel competent when they believe that an activity best tests their limits and promotes personal development. Deci and Ryan (2000) described how this enhances the participant's sense of flow and self-efficacy during these tasks. As a result, feeling competent is a crucial need for experiencing flow and self-efficacy.

On the other hand, users of gamified platforms will not feel their psychological demand for autonomy is satisfied if they feel that their actions are being unduly regulated. Suh et al. (2018) believe that this lack of autonomy reduces self-efficacy and breaks the flow. This suggests that in a gamified platform, a user's sense of autonomy serves as a gauge for both flow and self-efficacy. When offered the chance to build strong bonds and engage with others, users of these platforms frequently report feeling more in the flow. According to Ryan et al. (2006), these user interactions promote a sense of relatedness and reciprocal concern, which in turn improves self-presentation and flow. In other words, the perceived sense of relatedness shapes both flow and self-presentation on a gamified platform. Huang and Capple (2005) put forth that intrinsic interests are usually what drive participants of online games. According to the application of cognitive evaluation theory in gamified platforms, people whose psychological requirements are satisfied by gamified platforms are more likely to experience an increased state of flow. As a result, the research presents the hypotheses that follow:

H4a: Competence positively influences self-efficacy on a gamified virtual learning platform.

H4b: Competence positively influences flow on a gamified virtual learning platform.

H5a: Autonomy positively influences self-efficacy on a gamified virtual learning platform.

H5b: Autonomy positively influences flow on a gamified virtual learning platform.

H6a: Relatedness positively influences self-presentation on a gamified virtual learning platform.

H6b: Relatedness positively influences flow on a gamified virtual learning platform.

### **3.3 The effects of Intrinsic Motivation on users' engagement**

According to Kahn (1990), engagement is a psychological state in which a person is fully committed to a goal; those who are in this condition are said to be "completely there." This shows that they are totally committed to their duties and task performance and are not just physically present, but also psychologically involved. As stated by Liang et al. (2018), this level of involvement forces people to voluntarily devote their mental, emotional, and physical efforts to a particular work. Liang et al. (2018) continue, that intrinsic motivation satisfies a person's inner needs, which in turn encourages a greater level of dedication to a work and, eventually, a psychological state of engagement. This is empirically supported by Feng et al. (2018), who reveal that those who are more intrinsically motivated participate at higher levels. As Kahn (1990) points out, a sense of meaningfulness is a necessary condition for feeling engaged in tasks. This is about having the impression that one is getting a good return on their own investment. Those who are intrinsically motivated see their investments as important, worthwhile, and valuable. They are typified by playfulness, social relationships, self-efficacy, and self-presentation. As Feng et al. (2018) point out, this drives people to engage themselves completely in the job. Additionally, Rich et al. (2010) underscore the noteworthy impact that self-assurance in one's abilities has on an individual's propensity to participate in a certain job or conduct. Self-actualising people are more likely to meet challenges head-on and strive for personal fulfilment by actively participating in their work. Taking these revelations into account, this research proposes the following hypotheses:

H7: Self-presentation positively influences user engagement in a virtual learning platform via Metaverse.

H8: Self-efficacy positively influences user engagement in a virtual learning platform via Metaverse.

H9: Flow positively influences user engagement in a virtual learning platform via Metaverse.

### **3.4 The moderating role of privacy Disclosure**

As technology advances and human interaction patterns change, it is now possible to identify a user's digital footprint—which includes personal, professional, and demographic data—by using things such as Internet cookies (Fuller, 2018; Meshi and Ellithorpe 2021). According to Fuller (2018), there might be hazards to the user's sensitive information in this scenario, including financial information, personal details, compassionate data, and other legal specifics. With the ability to record psychological reactions, cognitive expressions, behaviours, and communication, the development of Metaverse is well-positioned to act as a virtual canvas for human emotions. Many businesses might utilise this information to forecast and customise offers that are focused on the needs of users (Dhir et al. 2018). Based on historical evidence, it has been shown by Fuller

(2018) that social data is gathered from different social media platforms in order to obtain insights into user preferences. As discussed by Suzuki et al. (2020) and Jaynes et al. (2022), a variety of user behaviours based on various circumstances, emotional states, individual preferences, and virtual communication modalities can be recorded in the Metaverse. The lack of comprehensive privacy settings has the potential to compromise user privacy in the Metaverse. Privacy settings must make sure that user activity is never recorded or shared without permission.

According to Feng et al. (2018), gamification features have the potential to increase internal incentives through changing self-efficacy, self-presentation, and the flow experience, which in turn affects engagement in an activity. Self-efficacy is centred on a person's subjective evaluation of their ability to do particular actions or work towards future goals. As such, it may not provide an accurate indicator of an individual's true competency level. Eastin and LaRose (2018) state gaining more experience in a certain task area strengthens self-efficacy views about one's ability to do such tasks. To put it simply, people who are more concerned about privacy are more likely to participate, when they feel confident in their ability to protect their privacy.

In accordance with the findings of Baumeister and Hutton (1987), self-presentation refers to the readiness and desire to communicate one's identity and establish connections with others. People who have a strong preference for how they express themselves online are drawn to websites that let them display aspects of their personalities, such as their ecological beliefs. They then participate in more chores as a result of this. Similar to self-efficacy, persons with higher privacy disclosure concerns are more likely to participate when they see themselves as more confident in their appearance. Csikszentmihalyi (1975) defines the flow experience as a condition in which people fully participate in an activity without regard to time or expense. Furthermore, people who are in the flow state frequently report feeling extremely happy and are prepared to make sacrifices in order to maintain this frame of mind. Whittaker et al.'s (2021) research demonstrates that the flow state directly and favourably affects consumer engagement. Similar to self-efficacy and self-presentation, users who are more concerned about privacy disclosure are more affected by the flow experience. In light of these insights, this study advances the following hypotheses:

H10: privacy disclosure concerns of users positively influence user engagement in a virtual learning platform via Metaverse.

H11a: The effect of self-efficacy on users' engagement is greater for users with high privacy disclosure concerns.

H11b: The effect of self-presentation on users' engagement is greater for users with high privacy disclosure concerns.

H11c: The effect of flow on users' engagement is greater for users with high privacy disclosure concerns.

## 4. METHODOLOGY

This research will be conducted by using a mixed method, and data will be collected through a series of focus groups, in-depth interviews, and surveys. Students and educators in UK Higher Education will be the subject of this research. We are going to focus on the UK business schools' students and educators and plan to conduct at least 20 focus groups, 10 with students and 10 with educators (with at least 6 participants in each focus group) from different UK higher education institutions. Through applying convenience sampling, the aim is to reach out to at least 10 universities (including the University of Kent, University of Sussex, University of Brighton, Queen Mary University of London, University of Loughborough, University of Leeds, University of Birmingham, University of Bedfordshire, University of Kings College, and University of Surrey), as the research team has close network with these universities. This would make the accessibility to students and educators easier to arrange and run face-to-face focus groups. At the beginning of each focus group, a short intro along with a short video will be presented to participants about Metaverse and its application in the UK and then participants will be asked to share their ideas on the application of gamification in Metaverse in the UK higher education. Each focus group is expected to last about 50 minutes and participants will be provided with refreshments. Open-ended probing questions will be asked to assist us in addressing the two research questions.

Following the collection of detailed information from the focus group, a series of in-depth interviews will be conducted with at least 20 educators and 5 policymakers. This could be in the form of either face-to-face or online, depending on the availability of the participants. Purposive sampling will be applied to invite those academic participants who have expertise in the area, e.g., published in Metaverse and actively working and researching about it. The aim of this part is to obtain further in-depth information about Metaverse in the UK education, challenges, and benefits. As for policymakers, the aim is to purposefully find at least five participants, from institutional, local and national levels who are highly involved in policies in higher education to evaluate their views on the topic.

In light of the findings obtained from the qualitative stage, mentioned above, we then will revise our research framework and research hypotheses. Consequently, a questionnaire will be developed to test in the next stage. The survey's questionnaire will be split into two sections, the first of which included questions on demographics including gender, age, and prior experience using virtual learning environments, and the second of which included questions on research variables based on the research framework. Each construct is evaluated on a seven-point Likert scale, with 1 denoting strong disagreement and 7 denoting strong agreement. The data will be analysed by statistical methods, e.g., SEM, and path analysis by AMOS to assess each research hypothesis and address the proposed research questions. The aim in this stage is to collect at least 600 completed questionnaires from students and 300 from educators in various UK universities. We will apply random sampling and invite any undergraduate students doing any business-related degree at any UK business school to participate. Participants will be required to watch a short video at the beginning (about 5 mins) to know more about Metaverse and its application in higher education, and then complete the questionnaire which would take about 20 mins. The questionnaire will be sent online via email, LinkedIn, and other social media platforms to invite as many individuals as possible to take part in the survey.

## 5. EXPECTED FINDINGS AND CONTRIBUTIONS

This research aims to make a meaningful contribution to the academic landscape, with a particular focus on enhancing our understanding of Cognitive Evaluation Theory and its relevance to the higher education context. Moreover, it seeks to provide valuable insights for practitioners involved in shaping students' behaviour, intentions, and engagement, offering them innovative tools to elevate their performance, enrich their learning experience, and refine their pedagogical strategies to ultimately enhance the overall educational quality and organisational efficiency.

In this section, we will delineate the potential contributions of this research to academia, aligning them with the thematic areas of research introduced in the preceding section. Furthermore, we will outline the advantages this research can offer educational policymakers, particularly in terms of augmenting their technological capabilities to effectively support the integration of the Metaverse into higher educational settings.

### 5.1 Theoretical contributions

This research is designed to offer valuable insights within the realm of Cognitive Evaluation Theory. More specifically, it seeks to expand our understanding of user intention and engagement within the context of a virtual learning platform via Metaverse, which stands as the central focus of this research. It also delves into the examination of policymakers' decision-making processes and their capacity to shape a novel virtual platform tailored for educational purposes.

This research contributes to the theoretical literature on needs satisfaction, intrinsic motivation, privacy disclosure concerns, and user behaviour in the context of gamified virtual learning platforms. The findings here close this gap and add to prior studies by showing how gamification mechanics are key to influencing intrinsic motivation, needs satisfaction, and user engagement. They thus carry important implications at both the theoretical and practical levels. The present research contributes specifically to the primarily theoretical literature on how gamification mechanics enhance user behaviour from a cognitive evaluation theory standpoint. The findings add to research on intrinsic motivation through a focus on its vital role in inducing users to engage in a virtual environment when a gamified platform fulfils their needs. Even though the user engagement concept is not complex, no research has clarified how satisfaction of users' needs affects behaviour.

### 5.2 Empirical contributions

This research will offer policymakers at educational/local and national institutions to improve their technological capabilities if they are to support the usage of Metaverse in higher education. For example, policymakers and decision-makers in higher education are suggested to make technical resources (such as VR-head-mounted displays) available to students to support them with various forms of interactions. This has been acknowledged in the study of Sebastien et al. (2018) who introduced the Immex program, which is made up of various programs, each of which corresponds to a Metaverse university environment. The program consists of the whole experience, internal building experience, and outdoor campus (the outsides and insides of buildings can be visited). However, in addition to having access to the necessary technologies, decision-makers

should provide educators with the required training on how to modify their teaching practices to take advantage of these resources.

Moreover, at decision-making levels, gamification is a useful marketing tool to enhance users' needs satisfaction, and intrinsic motivation. In addition, it is an effective means to increase users' participation in various activities. This study offers policymakers insights to improve their understanding of users' needs satisfaction using gamification. Privacy disclosure concerns are considered to be key indicators of behavioural intentions. Finally, this research is expected to propose that the successful use of Metaverse would aid academic institutions in resolving some difficulties associated with conventional classroom settings (e.g., time, space, physical and human resources). Through improved monitoring processes and skill development, Metaverse makes it possible to deliver education beyond time and space, which eventually improves the overall quality and organisational efficiency. Therefore, it is advised that when making plans for increased e-learning adoption, university decision-makers consider the aforementioned propositions.

## 6. REFERENCES

- Abeles, T.P., 2007. Education unbound. *On the horizon*, 15(4), pp.199-203.
- Agustini, K., Putrama, I. M., Wahyuni, D. S., & Mertayasa, I. N. E. (2023). Applying gamification technique and virtual reality for prehistoric learning toward the metaverse. *International Journal of Information and Education Technology*, 13(2), 247-256.
- Alsadoon, E., Alkhawajah, A., & Suhaim, A. B. (2022). Effects of a gamified learning environment on students' achievement, motivations, and satisfaction. *Heliyon*, 8(8).
- Bachtiar, F. A., Pradana, F., Priyambadha, B., & Bastari, D. I. (2018, July). CoMa: Development of Gamification-based E-learning. In *2018 10th International Conference on Information Technology and Electrical Engineering (ICITEE)* (pp. 1-6). IEEE.
- Baydas, O., & Cicek, M. (2019). The examination of the gamification process in undergraduate education: a scale development study. *Technology, Pedagogy and Education*, 28(3), 269-285.
- Behl, A., Jayawardena, N., Pereira, V., Islam, N., Del Giudice, M., & Choudrie, J. (2022). Gamification and e-learning for young learners: A systematic literature review, bibliometric analysis, and future research agenda. *Technological Forecasting and Social Change*, 176, 121445.
- Burke, B. (2014). Why gamification is not a game. *CIO Journal*.
- Casile, M., Gerard, J. G., & Soto-Ferrari, M. (2021). Gender differences in self-efficacy, acceptance, and satisfaction in business simulations. *The International Journal of Management Education*, 19(2), 100473.
- Chien, S.Y., Hwang, G.J. and Jong, M.S.Y., 2020. Effects of peer assessment within the context of spherical video-based virtual reality on EFL students' English-speaking performance and learning perceptions. *Computers & Education*, 146, p.103751.
- Clark, M.A., 2009. Genome Island: A virtual science environment in Second Life. *Innovate: Journal of Online Education*, 5(6).
- Dastjerdi, N. B. (2016). Factors Affecting ICT Adoption among Distance Education Students Based on the Technology Acceptance Model--A Case Study at a Distance Education University in Iran. *International Education Studies*, 9(2), 73-80.
- Deci, E. L. (1975). Intrinsic motivation plenum. *New York*.
- Deci, E. L., Cascio, W. F., & Krusell, J. (1975). Cognitive evaluation theory and some comments on the Calder and Staw critique.
- Deci, E. L., Ryan, R. M., Deci, E. L., & Ryan, R. M. (1985). Conceptualizations of intrinsic motivation and self-determination. *Intrinsic motivation and self-determination in human behavior*, 11-40.
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011, September). From game design elements to gamefulness: defining "gamification". In *Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments* (pp. 9-15).
- Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of educational technology systems*, 49(1), 5-22.
- Dhir, A., Yossatorn, Y., Kaur, P., & Chen, S. (2018). Online social media fatigue and psychological wellbeing—A study of compulsive use, fear of missing out, fatigue, anxiety and depression. *International Journal of Information Management*, 40, 141-152.
- Díaz, J., Saldaña, C. and Avila, C., 2020. Virtual world as a resource for hybrid education. *International Journal of Emerging Technologies in Learning (iJET)*, 15(15), pp.94-109.

- Ding, L. (2019). Applying gamifications to asynchronous online discussions: A mixed methods study. *Computers in Human Behavior*, 91, 1-11.
- Domínguez, A., Saenz-de-Navarrete, J., De-Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J. J. (2013). Gamifying learning experiences: Practical implications and outcomes. *Computers & Education*, 63, 380-392.
- Eastin, M. S., & LaRose, R. (2000). Internet self-efficacy and the psychology of the digital divide. *Journal of computer-mediated communication*, 6(1), JCMC611.
- Feng, Y., Ye, H. J., Yu, Y., Yang, C., & Cui, T. (2018). Gamification artefacts and crowdsourcing participation: Examining the mediating role of intrinsic motivations. *Computers in Human Behavior*, 81, 124-136.
- Forbes, 2022. Metaverse Vs Multiverse: How To Tell Apart The ‘Parallel Universe’ Concepts We Can’t Stop Talking About. <https://www.forbes.com/sites/jamiecartereurope/2022/02/07/metaverse-vs-multiverse-how-to-tell-apart-the-two-mind-bending-concepts-we-can’t-stop-talking-about/?sh=2af83f8378cc>. (Accessed 20 February 2022).
- Fuller, M. (2019). Big data and the Facebook scandal: Issues and responses. *Theology*, 122(1), 14-21.
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26(4), 331-362.
- Hamari, J., & Koivisto, J. (2013, June). Social Motivations To Use Gamification: An Empirical Study Of Gamifying Exercise. In *ECIS* (Vol. 105, No. 5, pp. 18-19).
- Hamari, J., Koivisto, J., & Sarsa, H. (2014, January). Does gamification work? -A literature review of empirical studies on gamification. In *2014 47th Hawaii International Conference on System Sciences* (pp. 3025-3034). IEEE.
- Hammedi, W., Leclercq, T., & Van Riel, A. C. (2017). The use of gamification mechanics to increase employee and user engagement in participative healthcare services: A study of two cases. *Journal of Service Management*.
- Hanus, M. D., & Fox, J. (2015). Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance. *Computers & Education*, 80, 152-161.
- Hassan, M. A., Habiba, U., Majeed, F., & Shoaib, M. (2021). Adaptive gamification in e-learning based on students’ learning styles. *Interactive Learning Environments*, 29(4), 545-565.
- Huang, Z., & Cappel, J. J. (2005). Assessment of a web-based learning game in an information systems course. *Journal of Computer Information Systems*, 45(4), 42-49.
- Huotari, K., & Hamari, J. (2017). A definition for gamification: anchoring gamification in the service marketing literature. *Electronic Markets*, 27(1), 21-31.
- Jaynes, C., Seales, W. B., Calvert, K., Fei, Z., & Griffioen, J. (2003, May). The Metaverse: a networked collection of inexpensive, self-configuring, immersive environments. In *Proceedings of the workshop on Virtual environments 2003* (pp. 115-124).
- Kapp, K. M. (2013). *The gamification of learning and instruction fieldbook: Ideas into practice*. John Wiley & Sons.
- Khalidi, A., Bouzidi, R., & Nader, F. (2023). Gamification of e-learning in higher education: a systematic literature review. *Smart Learning Environments*, 10(1), 10.
- Khansulivong, C., Wicha, S., & Temdee, P. (2022, January). Adaptive of New Technology for Agriculture Online Learning by Metaverse: A Case Study in Faculty of Agriculture, National

University of Laos. In *2022 Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON)* (pp. 428-432). IEEE.

Koivisto, J., & Hamari, J. (2019). The rise of motivational information systems: A review of gamification research. *International Journal of Information Management*, 45, 191-210.

Kong, J. S. L., Kwok, R. C. W., & Fang, Y. (2012). The effects of peer intrinsic and extrinsic motivation on MMOG game-based collaborative learning. *Information & Management*, 49(1), 1-9.

Kuo, M. S., & Chuang, T. Y. (2016). How gamification motivates visits and engagement for online academic dissemination—An empirical study. *Computers in Human Behavior*, 55, 16-27.

Kyewski, E., & Krämer, N. C. (2018). To gamify or not to gamify? An experimental field study of the influence of badges on motivation, activity, and performance in an online learning course. *Computers & Education*, 118, 25-37.

Leclercq, T., Poncin, I., & Hammedi, W. (2020). Opening the black box of gameful experience: Implications for gamification process design. *Journal of Retailing and Consumer Services*, 52, 101882.

Lew, C., & Saville, A. (2021). Game-based learning: Teaching principles of economics and investment finance through Monopoly. *The International Journal of Management Education*, 19(3), 100567.

Liang, H., Wang, M. M., Wang, J. J., & Xue, Y. (2018). How intrinsic motivation and extrinsic incentives affect task effort in crowdsourcing contests: A mediated moderation model. *Computers in Human Behavior*, 81, 168-176.

López, F. R., Arias-Oliva, M., Pelegrín-Borondo, J., & Marín-Vinuesa, L. M. (2021). Serious games in management education: An acceptance analysis. *The International Journal of Management Education*, 19(3), 100517.

Ma, M., & Agarwal, R. (2007). Through a Glass Darkly: Information technology design, identity verification, and Knowledge contribution in Online Communities. *Information systems research*, 18(1), 42-67.

Meshi, D., & Ellithorpe, M. E. (2021). Problematic social media use and social support received in real-life versus on social media: Associations with depression, anxiety and social isolation. *Addictive Behaviors*, 119, 106949.

Mishra, R., & Kotecha, K. (2017). Student engagement through gamification in education gamifying formative assessment. *Journal of Engineering Education Transformations*, 30(Special Issue).

Muntean, C. I. (2011, October). Raising engagement in e-learning through gamification. In *Proc. 6th International Conference on Virtual Learning ICVL* (Vol. 1, pp. 323-329).

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and research in Education*, 7(2), 133-144.

Nurhidayah, N.N., Halim, N. and Basri, M., 2020. Analyzing student's learning outcomes using a systemic approach. *Asian EFL Journal*, 27(41), pp.230-247.

O'Brien, H. L., & Toms, E. G. (2008). What is user engagement? A conceptual framework for defining user engagement with technology. *Journal of the American Society for Information Science and Technology*, 59(6), 938-955.

Ortiz-Martínez, E., Santos-Jaen, J. M., & Palacios-Manzano, M. (2022). Games in the classroom? Analysis of their effects on financial accounting marks in higher education. *The International Journal of Management Education*, 20(1), 100584.

Palmunen, L. M., Lainema, T., & Peltó, E. (2021). Towards a manager's mental model: Conceptual change through business simulation. *The International Journal of Management Education*, 19(2), 100460.

Pankiewicz, M. (2016). Data analysis for measuring effects of gamification in e-learning environments. In *EDULEARN16 Proceedings* (pp. 7082-7088). IATED.

Pérez-Pérez, C., González-Torres, T., & Nájera-Sánchez, J. J. (2021). Boosting entrepreneurial intention of university students: Is a serious business game the key?. *The International Journal of Management Education*, 19(3), 100506.

Proulx, J. N., Romero, M., & Arnab, S. (2017). Learning mechanics and game mechanics under the perspective of self-determination theory to foster motivation in digital game-based learning. *Simulation & Gaming*, 48(1), 81-97.

Przybylski, A. K., Rigby, C. S., & Ryan, R. M. (2010). A motivational model of video game engagement. *Review of general psychology*, 14(2), 154-166.

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *Academy of Management Journal*, 53(3), 617-635.

Robson, K., Plangger, K., Kietzmann, J. H., McCarthy, I., & Pitt, L. (2015). Is it all a game? Understanding the principles of gamification. *Business horizons*, 58(4), 411-420.

Ryan, R. M. (2017). *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. The Guilford Press A Division of Guilford Publications, Inc. New York.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, 25(1), 54-67.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, 25(1), 54-67.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol*. 55(1):68–78.

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary educational psychology*, 61, 101860.

Saleem, A. N., Noori, N. M., & Ozdamli, F. (2022). Gamification applications in E-learning: A literature review. *Technology, Knowledge and Learning*, 27(1), 139-159.

Schaf, F.M., Paladini, S. and Pereira, C.E., 2012. 3D AutoSysLab prototype social, immersive and mixed reality approach for collaborative learning environments. *International Journal of Engineering Pedagogy (iJEP)*, 2(2), pp.15-22.

Schlemmer, E., Trein, D. and Oliveira, C., 2009. Metaverse: telepresence in 3D avatar-driven Digital-Virtual Worlds. *@ tic revista d'innovació educativa*, (2), pp.26-32.

Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: A survey. *International Journal of human-computer Studies*, 74, 14-31.

Simões, J., Redondo, R. D., & Vilas, A. F. (2013). A social gamification framework for a K-6 learning platform. *Computers in Human Behavior*, 29(2), 345-353.

Sørenbø, Ø., Halvari, H., Gulli, V. F., & Kristiansen, R. (2009). The role of self-determination theory in explaining teachers' motivation to continue to use e-learning technology. *Computers & Education*, 53(4), 1177-1187.

Suh, A., Wagner, C., & Liu, L. (2018). Enhancing user engagement through gamification. *Journal of Computer Information Systems*, 58(3), 204-213.

Suzuki, S. N., Kanematsu, H., Barry, D. M., Ogawa, N., Yajima, K., Nakahira, K. T., ... & Yoshitake, M. (2020). Virtual Experiments in Metaverse and their Applications to Collaborative Projects: The framework and its significance. *Procedia Computer Science*, 176, 2125-2132.

Tarouco, L., Gorziza, B., Corrêa, Y., Amaral, É.M. and Müller, T., 2013, March. Virtual laboratory for teaching Calculus: An immersive experience. In *2013 IEEE Global Engineering Education Conference (EDUCON)* (pp. 774-781). IEEE.

Tayal, S., Rajagopal, K., & Mahajan, V. (2022, March). Virtual reality based metaverse of gamification. In *2022 6th International Conference on Computing Methodologies and Communication (ICCMC)* (pp. 1597-1604). IEEE.

Toda, A. M., do Carmo, R. M., da Silva, A. P., Bittencourt, I. I., & Isotani, S. (2019). An approach for planning and deploying gamification concepts with social networks within educational contexts. *International Journal of Information Management*, 46, 294-303.

Urh, M., Vukovic, G., & Jereb, E. (2015). The model for introduction of gamification into e-learning in higher education. *Procedia-Social and Behavioral Sciences*, 197, 388-397.

Vaca Barahona, B., Cela Ranilla, J. and Gallardo Echenique, E.E., 2016. The communication in simulated learning environments.

Wei, C. L., Wang, Y. M., Lin, H. H., Wang, Y. S., & Huang, J. L. (2022). Developing and validating a business simulation systems success model in the context of management education. *The International Journal of Management Education*, 20(2), 100634.

Yamani, H. A. (2021). A conceptual framework for integrating gamification in e-learning systems based on instructional design model. *International Journal of Emerging Technologies in Learning (Online)*, 16(4), 14.

Yildirim, I. (2017). The effects of gamification-based teaching practices on student achievement and students' attitudes toward lessons. *The Internet and Higher Education*, 33, 86-92.

Zainuddin, Z., Chu, S. K. W., Shujahat, M., & Perera, C. J. (2020). The impact of gamification on learning and instruction: A systematic review of empirical evidence. *Educational research review*, 30, 100326.

Zhang, P. (2008). Motivational affordances: Reasons for ICT design and use. *Communications of the ACM*, 51(11), 145-147.