A Literature Review of the Applications of Gamification in E-Learning in Higher Education

Nik Mohd Faris Nik Min[1], Atiela Amran[2], Nurhidayah Rosely[3], Nurul Nadhira Amalin Azhari[4], Ayu Kamareenna Abdullah Thani[5], Muhammad Ammar Haidar Ishak[6]

[1,2,3,4,5,6]Faculty of Business and Management, Universiti Teknologi MARA Cawangan Kelantan, Malaysia

Abstract
The trend of adding game aspects into non-gaming facilities has attracted a lot of interest recently. Gamifcation's application in education offers a great benefit for social efects, user interaction, and motivation. E-learning has made advantage of gamifed aspects including points, badges, feedbacks, level, prizes, challenges, etc. Examining the pertinent literature has not revealed a systematic review of gamifcation in online learning. Therefore, this paper is to investigate the present literature using gamifcation and online education and emphasise the stated benefts and difficulties of gamifcation applications in online education. The current work adopted the approach of the literature review. The present work used a qualitative method of data collecting. As so, the main study keyword was "gamifcation". According to the findings, gamifcation is becoming more and more approved as a method for instruction to create more interesting learning surroundings. Moreover, elements inspire and help pupils to engage in a gamifcation system. The most often used gamifcation features in e-learning, according to the study, are points, leaderboards, badge, and level; they have a strong effect on the students. This paper is supposed to be very important for research on gamifcation uses in online learning. It supports earlier research and points out some interesting subjects for investigation to progress the field. These findings lead to recommendations on gamifcation uses in e-learning for additional study.
Keywords: E-Learning, Gamifcation, Gamifcation Elements, Advantages of Gamifcation, Challenges Of Gamifcation

Introduction
The extensive use of new technologies including the web, social media, and cell phones shapes university instructional systems. Teaching and training benefit from both modern computer technologies and encouraging better cooperation (Alzahrani & Alhalafawy, 2023). Teaching in any field nowadays differs greatly from what it did twenty years ago (Yu et al., 2024). Daily increasing relevance are internet-based technologies (Wang, 2023). This technique is e-learning or use of Web resources to ofer a great variety of approaches to develop knowledge and efciency; the web is also a wonderful resource for the complement

or substitution of conventional schooling by students and teachers. Common and allowing users directly to access material on private computers via the internet, e-learning systems and internet-based apps became familiar (Arufe Giráldez et al., 2022). As the internet is growing, the e-learning concept has gained more appeal (Baah et al., 2023).

Infrastructure is easily available, yet usually the learning process is conducted in person (Dahalan et al., 2024). Besides, technology is changing the way teachers create and pass on the knowledge, and vice versa. With e-learning tools, practically all education will be ahead steam (Bennani et al., 2022). E-learning has been rising in popularity such that many students obtain education at low rates. Since most student experiences are made available online by considering the contents of past publications, knowledge exchange is thus facilitated (Brifa et al.,2020). Unlike the traditional school structure, online learning ofers pupils a cultural and personally oriented learning experience free from their physical appearance (Dehghanzadeh et al. 2024). Learning and education have as their primary objectives allowing students to enrol and be active in classes (Flavián et al., 2024). Since kids are not encouraged to learn, this scenario serves as a motivation for extreme inspiration among them (Ayaz et al., 2023). Many times, schools make use of incentive programmes. They aimed to encourage learning for students Liu (2023), as commitment is a term with several connotations clarified by attendance, a desire to participate, or personal concern. The results are a range of interactions among teachers, students, and materials. Still, some engagement-defining tactics are also likely connected to several sides: social, cultural, and not primarily to straight appropriate for electronic learning environment (Chen et al., 2024). Gamifcation as a modern technique will help to improve the output of dynamic learning and blended education. Curriculum combining will enhance the educational procedures (Gupta, 2022). Apart from growing interest in games, especially in education, the adoption of the word and its favourable results has improved the number of these approaches in recent years (Toda et al., 2019). Robson et al (2015), further noted that gamify technology is becoming more and more used in many spheres of life for three reasons. The first reason is because the development and industry of computer games have grown during the last years, which calls for more research on comprehending, controlling, and building games and people's reasons to play. The expansion of social media, cellphones, websites, etc. comes second. It revolutionised businesses' involvement by means of interaction, conversation, and re-creation of any experience and knowledge.

Thirdly, the research conducted by nations and businesses is fascinating fresh approaches to effectively communicate and learn from behaviour and influence the users. Therefore, the conversion of teaching resources from conventional to digital forms could lead to a dilemma of residual since interactive components of education provide the basis of learning. Not every student will be confident or e-learning friendly (Mehta et al., 2022). Thus, fresh teaching strategies applied in many teaching systems globally have emerged to satisfy students' educational needs and offer students in locations with different atmospheric features and living conditions educational chances (Dastjerdi, 2016). This is why gamifcation's application in the field of e-learning is becoming more and more common (Urh et al., 2015). Gamifcation techniques are tactics, processes, and tools used by consumers regularly to decide how to include game basics in an exact non-game environment. The popularity of the term, favourable outcomes, and growing interest in games—especially for educational purposes—have driven the number of gamifcation techniques up in past years (Toda et al., 2019).

Another method increasingly used in the classroom is gamifed (Rodríguez et al., 2018). Long-recommended for a long time is the prospective advantage of gamifed learning and educational approaches (Ding et al., 2018). Many research have been conducted on gamifcation with an eye towards gamifed elements. Therefore, this work is to investigate the present literature using gamifcation and online education and emphasise the stated benefts and limitations of gamifcation applications in online education.

Theoretical Background of Using Gamifcation in E-Learning
As educator apply contemporary technology teaching tools, the acceptance of innovation through our daily life has touched classrooms. Students might participate in group projects, chat through online groups, see films included in course materials, or use different strategies on social media network pages (Sanchez et al., 2020). Information technology (IT) has seen notable development in recent years; hence, school systems cannot ignore such improvements in their structures. Emphasising students' variability, IT offers both exposure and fexibility to massive learning environments, so supporting inclusive, autonomous, and adaptive learning (Llorens-Largo et al., 2016). Still, all this change in education requires both intellectual and technical advancement (Ge, 2018). Theories underline the necessity of modifying this approach to improve understanding of students. Active learning, a teaching strategy including the learning cycle of the students, seems to be centred on the modern concept of student-centered learning (Freeman et al., 2014). Many ICT tools are accessible in today's environment to develop and spread awareness materials covering the internet, radio, TV, smartphone, laptop, computer, and tablet software application and hardware; some ICT devices have educational consequences (Jarrah et al., 2024). Every student and professor can most use most of this tool (Vergara et al., 2024). Inspired by application software, people are encouraged to adopt certain personally and mutually beneficial habits. Perhaps the most common advancement in this field has been splitting with technology, which usually use design features to inspire motivations in various tasks (Tsou& Putra, 2023). Apart from that, as an educational tool in many environments with the expansion of smartphones and interactive technology, games are more relevant and interesting (Jayawerdana et al., 2021). Researchers said the differences between "gamifcation" and "game-based learning" and clarified that in "game-based learning," students attain their educational goals by means of games. In learning by playing, "playing" usually is quite important for the process. Gamification of learning is the application of games to enhance the educational process. But gamifcation makes learning more dynamic and occurs totally outside the gaming setting. Gamifcation is the process of introducing gaming components into an unrelated context. Completing certain assignments results in rewards for students (Kashive & Mohite, 2023). For this reason, gamifcation has attracted more attention among the research community (Khaldi et al., 2023).

Gamifed is acknowledged and applied in many spheres including marketing, politics, industry, IT, ftness exercise, and health (Jarrah et al. 2024). Gamifcation apps have been adopted by health researchers and practitioners to offer online and mobile-based medical education (Briffa et al., 20220). Many of the members of the research community have so pushed game-building (Martinez-Garciia et al., 2023). Gamifcation is set to include gaming elements meant to boost human motivation and serve personal goals (Polat, 2023). In interactive gaming and digital sales, the idea of leveraging game design elements outside of the game to motivate and enhance user behaviour is rather important. And retention fast; acquired in intensity; this

is through Gamify (Yan et al., 2022). Many research refuted the technical term "gamifcation". It is defined as the process by which elements of game design find their application in non-game environments (Bai et al., 2020; Zainuddin et al., 2020a;).

Moreover, the actual world starts to enter game-like and game components to change an activity such a breadboard, a handwriting recognition system, or gaming-like tools (Wang, 2023). The name gamifcation comes from the digital media sector first. From the realm of new technology, the word is a neologism. It was first proposed in 2002 and subsequently published in 2008; the first paper to employ gamifcation and it has been somewhat common in numerous felds since 2010. Gamifcation gains general acceptance among the scientific community (Bai et al., 2020). Games provide simple goals that are more split into temporarily easy targets that ofer players a smooth sense of achievement by means of rewards that act as external motivators (De-Marcos et al. 2014). Thus, gamifcation strategies are applied in educational settings to inspire students and, generally, to harness the competitive need that most people have to encourage effective behaviours (Cahyani et al. 2023). The extreme standard game components in many different study fields are points, avatars, challenges, levels, leaderboards/rank, badges (Yan et al., 2022).

Other gamifcation structures are unlocking content, battle, boss fghts, gifting, social network, quests, memes, and certifcates (Zainuddin et al., 2020a). In all felds, gamifcation can support motivating (Turan et al., 2022) beginning or retaining goal focused behaviour. Moreover, gamifcation is an increasing education phenomena (Khaldi et al., 2023) due of its effect on student learning. Apart from that, it is a teaching tool to inspire and empower, boost student involvement and interactivity, and motivate students to develop their talents (Zainuddin et al., 2020b). Wang (2023), clarified in the course of instruction that gamifcation elements inspire students to acquire more goal-oriented behaviour by means of more amazing patience, repeated learning, teamwork, and friendly competition with others. Thus, the online learning productive environment can encourage communication among faculty members and students, exchange and cooperation between students, time on task, feedback prompt, learning technics active, communicating strong standards, and honouring the variety and learning practices of any student (Jarrah et al., 2024). The gamifcation factor attracted much attention in the field of education and enhanced classroom participation (Yu et al., 2024). It seeks to inspire involvement by combining encouragement with outward inspiration (Dehghanzadeh et al., 2024). Then gamifcation is especially perfect for active learning since it gives students a healthy and pleasant environment to explore, produce nuanced decisions and reflect about the repercussions of their behaviour (Despeisse 2018). Encouragement of them to participate actively in decision-making will help to further this goal. Equally crucial, gamifed aims to include more enjoyment and involvement in the classroom, thereby providing constructive input that drives, encourages, and helps students to get more involved. Encouragement is not a straightforward job, hence the effective development and application of the gamifaction interface need considerable effort (Baah et al., 2023).

Therefore, the instructional game that is created well present the continuous chance for improvement players, tremendous input problems too difficult to confront for any person, and communities that change in reaction to learners' behaviour (Urh et al., 2015). Nevertheless, regardless of encouragement, student participation will be concentrated on learning goals. One should take into account the accessible educational facilities and profle

of the pupils (da Rocha Seixas et al., 2016). Urh et al (2015), also showed the most significant factors in e-learning: pedagogy, technology, design, administration, people, learning materials, fance. Technology trends that support the necessary behaviour to employ game components and enhance corporate education outcomes help to improve behaviour. This method emphasises good education that reveals the need of learning by social interaction with the environment and coworkers (York and Dehaan, 2018). The growing evidence indicates gamifed is generally accepted as a valuable teaching technique to build appealing learning environments (Zainuddin et al., 2020a). Aiming at validating the benefits of splitting in favour of its capacity to inspire, participate and afect socially while enabling students to immerse themselves in experimental learning (Lopez and Tucker, 2019; Zainuddin et al. 2020a), the fndings of gamifed in education concentrated on observational data from recent research. To justify gamifed of instruction, one must first try to assess how gamifed affects student learning. Although gamifcation is somewhat prevalent, there is no agreement on improving the results of schooling (Bai et al., 2020). The literature research reveals various studies on gamifcation elements.

The Goals of Including Gamifcation Components into E-learning

Structured to provide students tailored possibilities based on their interests, current skills, and styles, integrated e-learning is a novel learning tool (Jianu and Vasilateanu 2017). Apart from that, Hubalovsky, Hubalovska, and Musilek (2019) clarified to inspire the learner and assist them; the online learning components should react with the following:

• E-learning materials will be developed to enhance the curriculum; their content should support full-time education.
• Online learning activities should remain interesting, engaging, and should incorporate graphics, etc.

The e-learning exercises should not be monotonous; rather, they should be somewhat stepping forward.

• The gamifcation elements ought to be applied in e-learning projects.
• The e-learning activities should be as complicated as the revised Bloom's taxonomy should go from the most difficult to the simplest events.

Conversely, Jianu and Vasilateanu (2017), identified a variety of potential models for an adaptive, domain, and integrated learning environment. Additionally, an adaptive system must adhere to a number of specific guidelines, including the following: eliciting achievement, providing feedback, evaluating user performance, evaluating user performance, setting objectives, remembrance of knowledge, presenting learning material, guiding the learning cycle, and improving transfer and retention. In the same vein, da Rocha Seixas et al. (2016) observed that enhancements in the framework that has been implemented are responsible for increased student engagement in learning practices. The communication between teachers and the actions proposed is influenced by the school's arrangement, the nurturing of flexibility, the interactions with peers, the encouragement of teachers, and the features of the activities. However, education technologies will be modified and enhanced to effectively address the evolving educational environment and the future generations of students

(Sanmugam et al., 2016b). As Jianu and Vasilateanu (2017), stated, the interactive, gamification education framework, which employs the most recent technology, enables learning to be more engaging, enjoyable, and productive.

Additionally, the mechanisms and features of games have been incorporated into e-learning to enhance its engagement and entertainment value (Hassan et al., 2019). Student commitment to the research process is enhanced by the use of instant input, which incorporates elements such as grades, certificates, ratings, and gamification honours. It improves their actions in pursuit of objectives and provides them with the capacity to document their learning successes and evaluate them in a transparent manner (Ding, 2019). Additionally, the objective of a gamification programme may be to increase awareness by increasing students' motivation to engage with and revisit class content within an instructional environment (Lopez and Tucker, 2019; Hassan et al., 2019). Consequently, in the educational setting, gamification is not a commodity in the sense of a serious game, but rather a mechanism that employs game features to motivate learners (Bai et al., 2020).

Consequently, gamification critics asserted that the incorporation of game elements into interactive e-learning experiences or classrooms could enhance learning outcomes by motivating and enthralling students (Bouchrika et al., 2019). Gamification structures that are well-designed can provide learners with ongoing incentives for random feedback, which can help them develop their skills as they engage in teaching activities during play. Nevertheless, a variety of recent research has demonstrated that gamification is not always beneficial for e-learning (De-Marcos et al. 2014). Its objective is to enhance the level of engagement among individuals and to motivate them to engage in additional activities (Urh et al., 2015). Similarly, Pankiewicz (2016), reported that he incorporated gamification elements into the e-learning programme and analysed the effect of this implementation on student interaction. As a result, the course layout has been altered. The scoring scheme is altered to ensure that points can be earned during each period. Similarly, in educational settings, gamification allows students to immediately provide feedback and recognition for their academic accomplishments. Additionally, it offers incentives to encourage increased student engagement and motivation (Kusuma et al. 2018; Tenório et al. 2016; da Rocha Seixas et al., 2016). The gamification method was integrated with a college course through the use of an interactive tutorial framework.

Concurrently, the authors noted a substantial impact on the students' information transfer, encouragement, and efficiency (Ding, 2019). It was discovered by Hanus and Fox (2015), that learners in the gamification programme exhibited lower levels of empowerment, motivation, and satisfaction than those in a non-gamified community. In an online learning programme that was provided to students, Sanchez et a (2020), suggested the use of technologies through assessments. Students will evaluate their comprehension of the specific learning module through self-paced assessments and offer feedback on their performance. Additionally, the gamifed peer evaluation model was implemented in the instructional framework of the MeuTutor, a smart tuition programme, by Tenório et al. (2016) to monitor student learning in person, guarantee consistency in teaching, and improve the performance of their members. They were employing MeuTutor knowledge from the gamification platform for online learning. Customised student assistance was incorporated into the provisional course details. MeuTutor employs artificially intelligent technologies to determine the pace of

students, thereby facilitating the resolution of teaching and learning challenges (Paiva et al. 2016).

The Benefits of the Gamified Education Process for Students and Instructors

Gamification is expanding in the field of education (Sánchez-Mena et al. 2016). The task of motivating learners to learn has become increasingly difficult (Smiderle et al. 2020). Ribeiro et al. (2018) contend that gamification is an effective approach because students are captivated by electronic technology and apparatuses, which fosters a relaxed environment.

Benefits for Students

The researchers asserted that the incorporation of game components into the online learning environment facilitates the attainment of the established objectives, as well as motivates and inspires students (Jayalath and Esichaikul 2020). The majority of educators anticipate that the implementation of gamification will enhance the success and positivity of school participation and motivate students to learn (de-Marcos et al., 2017). In fact, the learning centre is the instructor, and students are expected to peruse the text, respond to questions, and complete content assessments (Papp and Theresa 2017). Azmi et al (2015), assert that the incorporation of game elements into education has resulted in increased student engagement in both traditional classroom settings and online learning.

The inclusion of games in the classroom is based on the conviction that the intrinsic appeal of games and the factors that contribute to their enjoyment serve to heighten students' internal motivation to participate in educational activities. The international study findings on creative teaching and learning confirm that innovative education thrives in educational environments with a supportive and positive overall culture (Hamari and Nousiainen, 2015). It was also believed that the intrinsic engagement of games would increase student engagement in the learning process, thereby promoting experiential learning, problem-based learning, and constructive learning (Smiderle et al., 2020). The primary aims of gamification are to enhance specific skills, establish objectives that provide a rationale for learning, engage students, optimise learning, encourage a change in attitude, and engage in interaction (Krause et al. 2015; Dichev and Dicheva, 2017). Popular gameplay design concepts include social participation, freedom of choice, liberty to fail, and rapid reactions (Dicheva et al., 2015). Therefore, gamification is not limited to the superficial rewards of badges, points, and credibility; it has the potential to induce behavioural change, particularly when combined with the scientific concepts of cyclical learning and guaranteeing to retain (Furdu et al., 2017; Strmečki et al., 2015).Additionally, it enhances the likelihood of group learning by providing the learner with feedback on their performance during a challenge or end state, which in turn enhances their social engagement. In addition to providing students with the freedom of choice to fail, this provides an incentive for them to resubmit assignments and revisit their coursework without penalty. Quick notes are a means of providing students with feedback on their educational performance (Smiderle et al., 2020). Additionally, users' self-esteem and motivation are enhanced (Urh et al., 2015). Gamification has been acknowledged as an effective method for enhancing student learning through a variety of learning approaches, as per the researchers' investigation (Bai et al., 2020). For example, Su (2017), implemented a gamification strategy in a geometric arithmetic curriculum and observed that students' learning outcomes were enhanced. Ding et al (2018), also proposed that well-designed gamification has the potential to significantly motivate students to engage in online debate

activities. Consequently, the online discussion offers learners greater flexibility and allows them to reflect and consider in order to produce precise content (Huang et al. 2019).

Benefits for Educator

Gamification can be a valuable instrument for enhancing essential capabilities, including decision-making, cooperation, and communication (Dicheva et al., 2015). Additionally, acquire 21st-century skills and establish an effective and appropriate environment for evaluating, communicating, and engaging with colleagues in the classroom. In an educational setting, gamification enhances the relationship between students and the instructor and enhances their sense of creativity (Brifa et al., 2020).

Consequently, gamification in the classroom is regarded as a deliberate approach to expedite the learning process, teach complex subjects, and foster systems thinking (Ding et al., 2018). Nevertheless, gamification is flexible, as it can be employed to address the majority of learning requirements, such as product sales, client service, soft skills, and awareness-building. This results in performance improvements for institutions (Furdu et al., 2017).

The Obstacles to the Gamified Education Process for Students and Educators

Gamification in education continues to be a topic of considerable debate, despite the fact that a multitude of studies have been conducted (Smiderle et al., 2020). Following the integration of gamification into the classroom to enhance the effectiveness of instruction at all levels, the concept of gamification continues to be characterised by a distinct indication. Perhaps this is due to the term "gamification," which is a term that is not typically associated with learning, but rather with the act of playing a game that is entertaining, unproductive, and enjoyable. Conversely, it is inaccurate to regard gamification as an optimal solution for educators and learners (Papp and Theresa, 2017).

The Obstacles Students Face

Other research has demonstrated that the implementation of gamification elements has not significantly improved students' sense of group and has not significantly improved their talents, desire for achievement, and inner inspiration (Mekler et al. 2017; Kyewski and Krämer, 2018).Additionally, the implementation of innovative learning through games necessitates a significant amount of effort from both students and teacher. The characteristics of digital learning in the contemporary knowledge society are not regulated by time or location (Al-Azawi et al., 2016).

Consequently, it is imperative to identify a method to accommodate the unique requirements of each participant in order to guarantee a specific game (Brifa et al. 2020). Gartner (2015) estimates that approximately eighty percent of all gaming applications will fail as a result of inadequate design (Urh et al. 2015). According to critics, gamification impedes education by diverting attention, imposing unnecessary competition, and potentially causing a lack of educational requirements for certain students (Sánchez-Mena and Martí-Parreño 2017). However, gamification in the educational process does not necessarily entail that students receive sponsorship or engage in activities beyond mere external motivation, such as virtual rewards or achievement points (Zainuddin et al., 2020).

The Obstacles Educators Face

The primary reason for the unsuccessful learning experience of the gamified application, as per Zainuddin et al (2020), is the use of game elements, instructional design, and technical issues. Barriers, including classroom issues and technological infrastructure (e.g., non-functioning computers, power disruptions, and, most importantly, the internet). The faculty were hesitant to incorporate gamification elements into their teaching plans due to their scepticism regarding the concept's efficacy in enhancing student comprehension. (Jong et al., 2015). Additionally, educational designers must acquire an empirical comprehension of the following: learning objectives, outcomes, and content, when evaluating the selection of individual plays (Derfer-Rozin and Pitesa, 2020).

Elements of Gamification Employed in E-Learning
The gamification principle is predicated on a self-determination theory that presupposes three emotive human desires: autonomy, competence, and social connection (Hassan et al. 2019). These requirements provide learners with a critical incentive to enhance their capabilities; these abilities facilitate their maintenance and enhance their commitment to educational pursuits (Hanus and Fox 2015). Consequently, the primary focus of gamification principles will be to create intrinsic incentives in order to satisfy these three criteria (Hassan et al., 2019). Efficient entertainment dynamics and competition features are more likely to attract gamified individuals, as these factors may influence the development of psychological requirements (Aldemir et al. 2018). The management of individuals as a diverse collective is not optimal for design, as preferences and expectations vary at the individual level, as evidenced by years of motivating recreation studies (Lopez and Tucker 2019). Gamification game elements are the digital game components that are applied to user actions in non-game environments; game features are the fundamental components of gamification (Sailer et al., 2017). Consequently, gamification components contribute to learners' motivation by satisfying their competitiveness and social self-determination requirements (Hassan et al. 2019). In addition, Kyewski and Krämer (2018), elaborate on the most significant factors in learning that are conceivable: motivation. Motivation is a critical factor in the learning process, as it determines the amount of time and interest students devote to studying a particular subject (Hassan et al., 2019). However, Denny (2014), suggested that humans possess two types of motivation: intrinsic and extrinsic. A person's external motive is the allure of a prize or reward, which motivates them to act. In addition to intrinsic motivation, they also tend to and prefer to do so for pleasure (Hassan et al., 2019).

Therefore, gaming techniques are developed by utilising resources, strategies, and interfaces to gamify an internet platform or device for individual or collaborative use. This may encourage users to develop their qualities (da Rocha Seixas et al. 2016). A modern design for each game is essential for a pleasurable gaming experience (Ding, 2019). Gamification is a concept that enhances the engagement of students in the preparation and study process, encouraging them to perform more effectively by utilising interactive revenue such as badges and achieving a dominant position on the boarding (Barata et al., 2017). Furthermore, the gamification component is believed to enhance the inspiration and teaching experience, as well as the efficiency and interaction of students. The inclusion of entertainment technologies, such as leaderboards, levels, and badges, has a positive effect on the engagement of learners (Zainuddin et al., 2020a).

Additionally, according to Buckley (2017), gamification may serve as an effective incentive. However, the effective challenge to learners' global encouragement is only achieved when the use of game values as social benefits or bonuses is employed as a reliable communication technique. Ding et al (2017), concluded that the gamification principle has effectively provided students with significant outward motivation, but not internal motivation. Leaderboards and badges are among the components that contribute to students' engagement in the learning process. Additionally, numerous attributes were identified as advantageous both online and offline (Sanmugam et al., 2016b).

The concept elements facilitate the differentiation between challenging and gamifed games (Sailer et al., 2017). The following are the most frequently employed components of learning:
• Points They are intended to recognise users across various divisions and measurements, and they may be located within the platform or programme to manage specific activities. In the event that aspects foster competition, they should not be considered outcomes. Conversely, if the objective is to provide feedback to a user, each accomplishment should not be displayed to others (da Rocha Seixas et al. 2016). In addition, Pankiewicz (2016) asserts that points enable us to incentivize and penalise undesirable behaviours, both positive and negative. If individuals who possess points complete exercises in the e-learning that was developed through gamification, their points may be increased (Bachtiar et al. 2018).

• Pin Badges are a visual representation of the development of individuals, such as the degree of competence achieved, immediate reviews, and one type of extrinsic award. An individual may be significantly influenced by symbols of development (Kyewski and Krämer 2018). Additionally, badges, which are the most prevalent game component in the gamification strategy, may not be beneficial for student learning. Conversely, the intrinsic motivation in education was positively correlated with the skillfulness badge, which was based on the knowledge of the skill of the learners.

Still, learners' motivation is only slightly affected by the symbol that is necessary to complete the mission (Ding, 2019). As accomplishment identifiers, badges have been implemented (Hassan et al. 2019). Above and beyond, markers were identified as cultural symbols to provide social effectiveness, in which the performance activities are essential (Hamari 2017). Badges are small symbols or signs that are awarded to students in recognition of their exceptional achievements, skills, participation, and positive actions (Roosta et al. 2016). Additionally, Aldemir et al. (2018) discovered that certain students preferred badges, while others maintained that they were not aware of or interested in symbols. The badge is composed of four codes: confidence booster, amusement, self-estimate, feedback, and systematic and continuous.

• Leaderboard The leaderboard could mention the top students and their rewards, thereby ensuring that their contributions are observed, quantified, and acknowledged (Bouchrika et al. 2019). In accordance with Aldemir et al. (2018), A leaderboard is a valuable instrument for fostering a sense of competition among students, as it is used to display their ranking and score (Roosta et al., 2016). A leaderboard is one of the most frequently employed gamifed elements; it is safe to conclude that its implementation in a gamified educational environment is advantageous. The four symbols below represent the leaderboard's related issues: teams, competition, participant, and reputation. The leaderboard may have an

adverse impact on the students, as it promoted social contrast among members more than modularity comparison (Sanmugam et al. 2016b).

• Level: Indicates that the user has achieved a goal; levels are frequently referred to as threshold phases. Consumer members will automatically level up in accordance with their sharing (Kyewski and Krämer 2018). The subsequent phase of the game is reserved for all players who performed admirably at the conclusion of the academic year (Pankiewicz 2016).

• Rewards: In gamification, the reward tool is based on a points system or related concepts, and it is given to encourage the repetition of the activity (Kyewski and Krämer 2018). The motivation of students increases when they accomplish a goal and receive rewards, and they will continue to repeat the same action in order to maintain their current situation and progress to a more suitable one (Kusuma et al. 2018).

• Feedback Feedback as gamified components has varying implementations; it can be employed to either promote or discourage specific activities, including the upload of CVs, the completion of assignments on time, and forum participation (Roosta et al., 2016). Additionally, students are able to provide insight into their objectives and monitor their progress through continuous feedback (Hassan et al., 2019).

• Obstacles Challenges are duties that individuals extract and subsequently present with awards for completion, medals/badges, and achievements. The key to successful expectations and responsibilities is to offer users the opportunity to demonstrate their accomplishments (Kyewski and Krämer, 2018). The challenge is indispensable in the gamification. Aldemir et al. (2018), stated that symbols are challenging engagement, emotion-arousal, distraction, competitive collaboration, team skills, feedback, reinforcement, self-assessment, collective intelligence, timing, challenge type repetitiveness, and frequency.

Consequently, gamification serves as an indispensable developmental approach that enables educators to acquire a basic understanding of the learning processes of individuals (Göksün and Gürsoy, 2019). Additionally, the advantages and disadvantages of game design are demonstrated through the use of gamified evaluation. Gamification applications may serve as an alternative instrument for students' evaluations (Zainuddin et al., 2020b). Consequently, components will provide support and encouragement to students who participate in a gamified learning environment (Chen et al. 2023). Conversely, gamification has been increasingly acknowledged as an efficient educational approach that is capable of generating engaging learning experiences (Zainuddin et al., 2020a).

Conclusion and Recommendation

The internet and mobile devices have had a positive impact on all sectors, as well as the advancement of technology. In the context of education, numerous contemporary technology tools, platforms, and sophisticated concepts have been integrated into the curriculum to provide educational value across the web (distance, synchronise, blended, electronic, or online learning). This concept is a unified concept for web-based learning. E-learning platforms are making significant strides in nearly every phase of the research process, as evidenced by numerous studies. In conjunction with technological advancements, numerous educational curricula emerged. Consequently, they were incorporated into

numerous educational systems to ensure that education was accessible to all students and to address their educational requirements. The principle of gamification has been established to enhance the transformation of information and the ideas of instructors into the educational curriculum, as opposed to traditional programming in the classroom, as a result of the development of computer devices and the web. Points, levels, stages, badges, leaderboards, awards, rewards, progress markers, stories, and comments are all gameplay elements that are employed to facilitate learning.

Gamification has gained prominence in recent years due to its encouraging results, such as an increase in media participation. According to research, gamification can be a valuable instrument for acquiring knowledge and can enhance essential capabilities, including communication, cooperation, and decision-making. Furthermore, gamification in education is an additional method for ensuring that learning remains engaging, interactive, and beneficial. In addition, the acquisition of twenty-first-century skills establishes an appropriate and effective assessment environment. Gamification's primary objectives are to enhance specific skills, identify objectives that motivate learning, engage students, maximise learning, and promote change in attitudes, as evidenced by the review of studies. The concept of gamification continues to be indicated in a unique manner. The studies indicate that gamification in educational activities is confronted with numerous challenges, including the provision of Internet service, technological infrastructure, and the intention of both students and instructors to utilise this tool. Instructive designers must devise a novel concept for each educational content, taking into account the unique needs of each pupil and the utilisation of suitable gamification elements.

By means of the studies that were examined, the objective of employing gamification in the field of e-learning was to motivate educators, introduce a gaming environment, facilitate collaboration among colleagues, and motivate students. Additionally, the educational process is enhanced and the needs of the current generation are met by incorporating gamification into the field of e-learning. Consequently, a variety of platforms have been employed to implement gamification activities for students and instructors, including (Socrative, Edmodo, Kahoot Quizizz, Mentimeter, Padlet, Flubaroo, Google Forms, Edpuzzle). The current study suggests that designers should exercise greater caution when incorporating the elements of play into the educational process in order to achieve the desired outcome, while also attending to the scientific content. Additionally, they should ensure that students comprehend the game's regulations, the game should be reasonably familiar to the majority of learners, the game's brief duration and simplicity, and the clarity of its laws. Additionally, promoting the familiarity of the concept of gamification among both students and instructors at varying levels of education. The analysis was restricted to a review of the literature published between 2020 and 2024. Consequently, this study suggested that additional research be conducted to establish an empirical investigation of the most beneficial components of gamified online learning. Then, the results can be more readily compared and reinforced. In other words, additional investigation is required to determine. We also observe that the quantity of papers published on gamification is somewhat concentrated on theoretical information and explanation. It is anticipated that this investigation will make a substantial contribution to the field of online education research regarding the utilisation of gamification applications. It corroborates prior research and identifies numerous valuable research topics that can be investigated to further the field. Additionally, it contributes to the

development of future strategies for gamification in online education for both researchers and practitioners.

References

Alzahrani, F. K., & Alhalafawy, W. S. (2023). Gamification for learning sustainability in the blackboard system: motivators and obstacles from faculty members' perspectives. Sustainability, 15(5), 4613.

Arufe Giráldez, V., Sanmiguel-Rodríguez, A., Ramos Álvarez, O., & Navarro-Patón, R. (2022). Can gamification influence the academic performance of students?. Sustainability, 14(9), 5115.

Ayaz, A., Ozyurt, O., Al-Rahmi, W. M., Salloum, S., Shutaleva, A., Alblehai, F., & Habes, M. (2023). Exploring gamification research trends using topic modeling. IEEE Access.

Baah, C., Govender, I., & Rontala Subramaniam, P. (2023). Exploring the role of gamification in motivating students to learn. Cogent Education, 10(1), 2210045.

Bai, S., Hew, K. F., & Huang, B. (2020). Is gamifcation "bullshit"? evidence from a meta-analysis and synthesis of qualitative data in educational contexts. Educational Research Review, 30, 100322. https:// doi.org/10.1016/j.edurev.2020.100322.

Bennani, S., Maalel, A., & Ben Ghezala, H. (2022). Adaptive gamification in E-learning: A literature review and future challenges. Computer Applications in Engineering Education, 30(2), 628-642.

Brifa, M., Jaftha, N., Loreto, G., Pinto, F. C. M., Chircop, T., & Hill, C. (2020). Improved students' performance within gamifed learning environment: A meta-analysis study. International Journal of Education and Research, 8(1), 223–244

Cahyani, L., Muhammad, I., Ugli, A. A. A., Aruna, A., & Surahmi, M. (2023). Digital Transformation in Education: A Bibliometric Review of E-Learning Trends and Challenges. Journal of Technology Global, 1(01), 54-63.

Chen, Y. C., Chao, C. Y., & Hou, H. T. (2023). Learning pattern recognition skills from games: Design of an online pattern recognition educational mobile game integrating algebraic reasoning scaffolding. Journal of Educational Computing Research, 61(6), 1232-1251.

Chen, Y. C., Hwang, G. J., & Lai, C. L. (2024). Motivating students to become self-regulatory learners: a gamified mobile self-regulated learning approach. Education and Information Technologies, 1-24.

Dahalan, F., Alias, N., & Shaharom, M. S. N. (2024). Gamification and game based learning for vocational education and training: A systematic literature review. Education and Information Technologies, 29(2), 1279-1317.

Dehghanzadeh, H., Farrokhnia, M., Dehghanzadeh, H., Taghipour, K., & Noroozi, O. (2024). Using gamification to support learning in K-12 education: A systematic literature review. British Journal of Educational Technology, 55(1), 34-70.

DerferRozin, R., & Pitesa, M. (2020). Motivation purity bias expression of extrinsic motivation undermines perceived intrinsic motivation and engenders bias in selection decisions. Academy of Management Journal (ja). https://doi.org/10.5465/amj.2017.0617.

Flavián, C., Ibáñez-Sánchez, S., Orús, C., & Barta, S. (2024). The dark side of the metaverse: The role of gamification in event virtualization. International Journal of Information Management, 75, 102726.

Gupta, S. (2022). Gamification and e-learning adoption: a sequential mediation analysis of flow and engagement. VINE Journal of Information and Knowledge Management Systems.

Jarrah, A. M., Wardat, Y., Fidalgo, P., & Ali, N. (2025). Gamifying mathematics education through Kahoot: Fostering motivation and achievement in the classroom. Research and Practice in Technology Enhanced Learning, 20(010).

Jayalath, J., & Esichaikul, V. (2020). Gamifcation to enhance motivation and engagement in blended eLearning for technical and vocational education and training. Technology Knowledge and Learning. https://doi.org/10.1007/s10758-020-09466-2.

Jayawardena, N. S., Ross, M., Quach, S., Behl, A., & Gupta, M. (2021). Effective online engagement strategies through gamification: a systematic literature review and a future research agenda. Journal of Global Information Management (JGIM), 30(5), 1-25.

Kashive, N., & Mohite, S. (2023). Use of gamification to enhance e-learning experience. Interactive Technology and Smart Education, 20(4), 554-575.

Khaldi, A., Bouzidi, R., & Nader, F. (2023). Gamification of e-learning in higher education: a systematic literature review. Smart Learning Environments, 10(1), 10

Liu, P. (2023). An entrepreneurship incubation process model and gamified educational software designed for sustainable education. Sustainability, 15(19), 14646.

Martinez-Garcia, A., Horrach-Rosselló, P., & Mulet-Forteza, C. (2023). Evolution and current state of research into E-learning. Heliyon, 9(10).

Mehta, A., Bond, J., & Sankar, C. S. (2022). Developing an inclusive education game using a design science research gestalt method. AIS Transactions on Human-Computer Interaction, 14(4), 523-547.

Polat, E. L. I. F. (2023). Gamification implementation for educational purposes: a scoping review (2013-2018). Educational Technology Quarterly, 2023(3), 367-400.

Tsou, H. T., & Putra, M. T. (2023). How gamification elements benefit brand love: the moderating effect of immersion. Marketing Intelligence & Planning, 41(7), 1015-1036.

Turan, Z., Küçük, S., & Karabey, S. (2022). Investigating Pre-service teachers' behavioral intentions to use web 2.0 Gamification Tools. Participatory Educational Research, 9(4), 172-189.

Vergara, D., Antón-Sancho, Á., & Fernández-Arias, P. (2023). Player profiles for game-based applications in engineering education. Computer Applications in Engineering Education, 31(1), 154-175.

Wang, Y. H. (2023). Can gamification assist learning? A study to design and explore the uses of educational music games for adults and young learners. Journal of Educational Computing Research, 60(8), 2015-2035.

Yan, H., Zhang, H., Su, S., Lam, J. F., & Wei, X. (2022). Exploring the online gamified learning intentions of college students: A technology-learning behavior acceptance model. Applied Sciences, 12(24), 12966.

Yu, Q., Yu, K., & Li, B. (2024). Can gamification enhance online learning? Evidence from a meta-analysis. Education and Information Technologies, 29(4), 4055-4083.

Zainuddin, Z., Chu, S. K. W., Shujahat, M., & Perera, C. J. (2020). The impact of gamifcation on learning and instruction: A systematic review of empirical evidence. Educational Research Review, 30, 100326. https://doi.org/10.1016/j.edurev.2020.100326.

Zainuddin, Z., Shujahat, M., Haruna, H., & Chu, S. K. W. (2020). The role of gamifed e-quizzes on student learning and engagement: An interactive gamifcation solution for a

formative assessment system. Computers & Education, 145, 103729. https://doi.org/10.1016/j.compedu.2019.103729.