Research Article

Students' goal orientation and gamification in learning for academic performance: A systematic literature review

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Abstract: This systematic literature review investigates the interplay between students' goal orientation, the incorporation of gamification in learning, and their academic performance. Utilizing the Kitchenham SLR methodology, the review encompasses 50 articles from diverse research domains and methodologies. The primary objective is to explore how students' goal orientations are affected by gamification and how these strategies influence their academic outcomes. The selected articles span topics such as achievement goal orientation, student engagement, and the psychological aspects of virtual gamification within educational psychology. The review underscores the potential of gamification to enhance student engagement and motivation, provided that the gamification strategies are carefully crafted to align with students' intrinsic motivations and learning objectives. However, it also cautions against possible adverse effects like increased anxiety or distraction. The paper calls for more research into tailored gamification approaches and their sustained impact on student engagement and performance, offering a compilation of references for further investigation into these themes.

Keywords: academic performance; gamification; learning; motivation; students' goal orientation

1. Introduction

The learning process involves a series of stages including engagement, motivation, information acquisition, processing, practice, feedback, consolidation, retention, and transfer, involving various models and theories to enhance knowledge and behavior (Rau et al., 2019). Previous researchers believe that numerous factors could be impacting the learning process, such as the cognitive abilities of the learner, their preferred learning style, motivation, instructional design, learning environment, and the implementation of educational strategies like gamification, active learning, flipped learning, and cooperative learning. In order to expand and improve their comprehension, students frequently go through these phases again in an iterative process known as effective learning (Murillo-Zamorano et al., 2021).

A variety of instructional tactics and approaches can greatly increase student motivation and engagement. The application of gamification in the classroom is one such strategy. By introducing components of game design, including points, badges, and leaderboards, into non-gaming situations, like education, gamification can increase student engagement and extrinsic incentive (Zainuddin, 2018). These components have the power to boost student motivation by making learning more active, engage, and competitive.

Active learning techniques are another way to increase motivation and engagement. Instead of just having students absorb knowledge passively, active learning requires students to actively participate in their own learning. This puts them in a more direct role in the learning process (Kalms, 2019; Murillo-Zamorano et al., 2021; Soler et al., 2022).

Collaborative projects, problem-solving exercises, and other interactive teaching methods can fall under this category (Fortus & Touitou, 2021).

It has also been demonstrated that using game-based learning tools like *Kahoot* improves student motivation and academic achievement. The dynamic and interactive nature of these platforms can result in higher levels of enthusiasm and engagement from students (Fuster-Guilló et al., 2019). Additionally, games can help with the development of several abilities, such as communication, cooperation, problem-solving, and strategic thinking. They can also be used to practice and apply new skills in a controlled and safe environment, as well as to reinforce topic understanding (Rau et al., 2019). Moreover, to improve the learning experience in higher education, educators must also consider such as attitude, intrinsic-extrinsic goal orientation, online collaboration, participation, and teaching strategies (Vezne et al., 2023).

Studies have indicated that the careful use of games into the curriculum can enhance learning objectives and foster a more profound comprehension of the subject matter by the students. It is crucial to make sure that the game compliments the learning objectives rather than detracting from them, and that the mechanics of the game are in line with the educational goals. In conclusion, by making the learning process more dynamic and interesting, games in the classroom can be an effective technique for improving learning.

Learning outcomes can be strongly impacted by a students' goal orientation or attitude to learning (Almeida et al., 2021; Honicke et al., 2020). In contrast to a student with a fixed mindset, who thinks that abilities are fixed and unchangeable, a growth mindset student is likely to achieve better learning outcomes because they believe that intelligence and abilities can be developed through effort, good instruction, and persistence. Thus, this paper aims to show the relationship between gamification and students' goal orientations towards learning.

2. Methods

As a previous explanation, we set the goal of this review to respond to the following research question (RQ), i.e. (1) how is the students' goal orientation, (2) how do students' goal orientation could affect their way or method of learning, and (3) how could learning with gamification influence students' goal orientation in learning.

This study uses the Kitchenham SLR approach to present the relationship between gamification and student orientation (Carrera-Rivera et al., 2022). The following steps such as opening, choosing the title and abstract, and choosing the entire paper are the steps in this process. This approach has been expanded from the medical field to other fields, including computer science (Kitchenham & Brereton, 2013). Planning, structuring, and results are the three simple steps in the Kitchenham SLR technique (Sauer & Seuring, 2023) that a literature review follows. These phases included every step of the literature review procedure, from planning to create the study's result. Every move made during each phase of the current inquiry is shown in Figure 1.
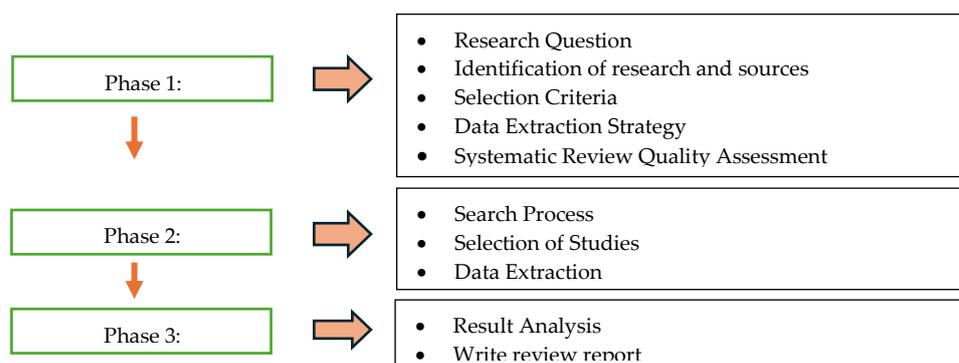

Figure 1. Methodology for systematic review of literature based on Kitchenham

The first step in the planning process was to decide on the review questions and set the aim. The purpose of the current study and the review questions are included in the Introduction section. A detailed explanation will be provided in the areas that follow building the view protocol, selecting pertinent databases, and utilizing keywords. The selection and creation of the research review procedure happened before the study even got underway.

2.1 Article Collection

The beginning step began with creating a string query to seek papers across the selected databases. The chosen term formed a query that was matched by the research goal, a synonym, or another relevant phrase (the influence of students' goal orientation on learning and gamification in learning). All the article refers to Social Science and the terms "student orientation" or "student learning intention" or "gamification in learning" and "Education" and "Gamification" were developed as a string query specifically for this study. The query's years were limited to 2019 to 2023. This period was chosen to evaluate recent developments on students' goal orientation in learning and its relationship with gamification. Subsequently, a defined string query was employed to comb through a selection of databases that were deemed pertinent to the objective of this investigation. Many different databases, such as ACM Digital Library, IEEE Xplore, SpringerLink, Wiley, Science Direct, SAGE, ERIC, and Taylor & Francis, were searched. All the databases are indexed Scopus Q1-Q4.

2.2 Inclusion and Exclusion Criteria

The literature review's overall validity is determined during the selection process, thus it is critical to establish precise inclusion criteria (IC) and exclusion criteria (EC). The following are important points in the selection of review criteria in this paper:

1. For IC and EC, we provided definitions for the keywords given in Table 1.
2. The year 2019 was selected as the commencement date due to the publication of the seminal work on evidence-based learning management systems in that year.
3. All the IC requirements had to be met, after some trial and error, the search string definition that followed IC1's. Throughout the procedure, we also modified the Scopus search parameters. Implementing IC2, IC3, and IC4 required specific criteria, namely Subject Area and Publication Year. Title, keywords, and abstract made up our search parameters.
4. 111 candidate papers were retrieved after the search string was performed via Scopus on 19 March 2019.
5. Out of the 111 papers, we eliminated 51 by applying IC1, IC2, and the EC to the title, abstract, and keywords.
6. After the data was extracted, we removed five publications whose full texts showed that they had failed to meet an IC or an EC.
7. In the end, we discovered five more papers by using the 50 selected papers as a starting point.

Table 1. Inclusion and exclusion criteria

No	Inclusion Criteria	Exclusion Criteria
1	Matching search queries with research topics	Unmatching search queries with research topics
2	English	Other than English
3	Publishes in the range of 2019 to 2023	Published before to 2019 and 2023
4	Published in ACM Digital Library, IEEE Xplore, SpringerLink, Wiley, Science Direct, SAGE, ERIC, and Taylor & Francis	Not Published on ACM Digital Library, IEEE Xplore, SpringerLink, Wiley, Science Direct, SAGE, ERIC, and Taylor & Francis

A selection procedure that adhered to the review procedures resulted in the identification of 50 papers as eligible for the current investigation. The study's objectives would guide the extraction of data from selected papers, with a primary focus on each paper's students' goal orientation in learning process and gamification influence students' goal orientation.

2.3 Analysis

Microsoft Excel was used to store the search results for subsequent analysis. The selected papers are designated with the numbers [A1]–[A50]. Rejected papers are recorded and we add as many columns as necessary to retrieve the data needed to answer RQ 1 to 3. We inductively synthesized codes from the retrieved data and categorized them into groups. Three steps are generally taken to prevent researcher bias: first, we create a list of all the papers we locate in Microsoft Excel; second, we create a list of categories based on the selected subject; and third, we arrange the papers into the appropriate categories.

3. Result

As can be seen from Table 1 above about the inclusion and exclusion criteria in this paper, there are 50 papers that meet the criteria. Table 2 provides a review of the research on student goal orientation in the learning process and the gamification can affect it.

Table 2. Overview of a chosen article

No.	Authors (Publication Year)	Research Area	Research Method
1.	(Filippou et al., 2018)	Gamification in education	Descriptive Statistics
2.	(Choi et al., 2022)	The impact of gamification	T-Test
3.	(Jong et al., 2022)	Educational technology	Mixed methods
4.	(Yeh et al., 2019)	Self-regulated learning	Quantitative Approach
5.	(Leenknecht et al., 2019)	Students goal orientation	Descriptive Statistics
6.	(Klock et al., 2020)	User-centered gamification	Mix Method
7.	(Antonaci et al., 2019)	Online education	Systematic literature review
8.	(Karmanova et al., 2019)	Educational technology	Unified Modeling Language
9.	(Romero-Rodriguez et al., 2019)	Gamification in education	Mix Method
10.	(Mese & Dursun, 2019)	The impact of gamification	Mix Method
11.	(Usán et al., 2019)	Educational psychology	Descriptive Statistics
12.	(Bostwick et al., 2020)	Educational psychology	Descriptive Statistics
13.	(Karbakhsh & Safa, 2020)	Educational psychology	Reliability estimates
14.	(Guo & Leung, 2021)	Achievement goals	Descriptive Statistics
15.	(Bergh & Giota, 2022)	Educational psychology	Psychometric analyses
16.	(Alhadabi & Karpinski, 2020)	Technology and communication in education	Quantitative approaches
17.	(Supervía & Bordás, 2020)	Educational psychology	Descriptive statistics
18.	(Moreira et al., 2020)	Educational Technology	Practical Application
19.	(Schweder, 2020)	Educational psychology	Confirmatory factor analysis
20.	(Díaz-Ramírez, 2020)	Engineering Education	variance analysis
21.	(Smiderle et al., 2020)	The impact of gamification	Descriptive analysis
22.	(Zainuddin et al., 2020)	The impact of different instructional methods	Mix Method
23.	(Fortus & Touitou, 2021)	Educational psychology	Polytomous Rasch analysis
24.	(Sánchez-Cardona et al., 2021)	Educational psychology	Quantitative method
25.	(Miller et al., 2021)	Student Engagement	Regression Analysis
26.	(Didin & Kasapoglu, 2021)	Students' achievement goal	Quantitative

No.	Authors (Publication Year)	Research Area	Research Method
		orientations	
27.	(Medlicott et al., 2021)	A mindfulness-based program	Descriptive statistic
28.	(Edwards et al., 2023)	Educational psychology	Descriptive statistics
29.	(Honicke et al., 2020)	Psychological constructs	Descriptive statistics
30.	(Howard et al., 2021)	Educational psychology	Comprehensive literature search
31	(Manzano-León et al., 2021)	Gamification in education	Systematic literature review
32.	(Bouchrika et al., 2021)	The impact of gamification	Descriptive analytics
33.	(Almeida et al., 2021)	Effects of gamification in education and learning systems.	Systematic literature review
34.	(Xu et al., 2021)	The impact of virtual gamification	Mix Method
35.	(Zhao et al., 2022)	The application of gamification in STEM	T-test
36.	(Choi et al., 2022)	The concept of Fear of Losing Out (FoLO)	Regression analysis
37.	(Chiu, 2022)	Educational psychology	Regression analyses
38.	(Soler et al., 2022)	Student learning, motivation	Descriptive statistics
39.	(Gjerde et al., 2022)	Educational psychology	Quasi-experimental design
40.	(Mosqueda, 2022)	Educational psychology	Descriptive statistic
41.	(Avsec & Szewczyk-Zakrzewska, 2023)	The examination of psychological construct	Administering surveys
42.	(Mulyadi et al., 2022)	The impact of goal orientation	Quantitative approach
43.	(Mose et al., 2022)	Goal orientation and learning readiness	Descriptive and inferential statistic
44.	(Firmansyah et al., 2022)	The development of interactive digital learning media	R & D
45.	(Alsadoon et al., 2022)	The impact of gamification	Multivariate Analysis of Variance
46.	(Erentaitė et al., 2023)	Academic motivation	Latent profile analysis (LPA)
47.	(Ni & Cheung, 2023)	The adoption and use of Intelligent Tutoring Systems	Questionnaire Survey
48.	(Vezne et al., 2023)	Student engagement	Collecting data through surveys
49.	(Khaldi et al., 2023)	The gamification of e-learning	Systematic literature review
50.	(Sevim-Cirak et al., 2023)	E-Learning readiness	Correlational research design

4. Discussion

The research areas covered in all studies provided are primarily focused on education, with a strong emphasis on the following themes such as gamification in education, MOOS and online learning, achievement goals and motivation, academic efficacy, student engagement and retention, environmental and demographic influences on education, teaching and learning strategies, educational psychology, and higher education experience. Students' goal orientation has been found to affect academic performance in various ways according to the research. While a learning-goal orientation is generally seen as beneficial for academic performance, the effects of other goal

orientations can be mixed and may depend on additional factors such as the type of feedback provided, cultural context, and specific learning environments.

4.1 Gamification in Education

Gamification is a multimodal approach to education that uses elements of game design in non-gaming environments to improve learning results, motivation, and student engagement. Because gamification is closely related to information technology and distance learning systems, it makes learning more immersive and interactive by straying from traditional paradigms and motivating students. It is especially effective in blended and e-learning environments (Romero-Rodriguez et al., 2019). Gamification aims to capture the intrinsic motivation that propels players to improve abilities and find enjoyment in the activity by harnessing the autonomous nature of games, which is defined by engagement and pleasure, in educational contexts (Moreira et al., 2020). High-quality performance, greater pleasure with the learning process, and higher interest in the course material are all outcomes of gamification in e-learning, according to empirical evidence from experiments.

However, gamification features can be labor-intensive to integrate because they require design expertise and a thorough method for evaluating students' knowledge and abilities (Karmanova et al., 2019). Gamification in education goes beyond simply making studying enjoyable; it also involves encouraging peer-communication of students, which greatly enhances their development of social, cognitive, and academic skills. It gives students more authority over their academic assignments, improving their appearance and encouraging teamwork, diligence, and other admirable traits (Manzano-León et al., 2021). Students' behavior and attitudes toward learning have been shown to change because of gamification, which also increases motivation and engagement and fosters an environment that is conducive to learning (Xu et al., 2021).

Studies show that gamification can improve students' long-term learning behavioral patterns by encouraging them to see their progress as accomplishments and to concentrate on reaching their objectives. Through this method, learning becomes a lasting and interesting activity that breaks procrastination and increases resilience to failure (Mese & Dursun, 2019). The teaching and learning process is made more interesting and motivating by utilizing gamification ideas, which are taken from video games. Gamification features like points, awards, progress bars, leaderboards, and content locking can be included into teaching, learning, and assessment activities when utilized in tandem with active pedagogies and learning management systems (Firmansyah et al., 2022). A growing interest in novel approaches to boost student motivation and engagement is shown in the emergence of game-based learning and the incorporation of gamification in the classroom. Different from game-based learning, gamification incorporates game mechanics, rules, and concepts into the learning process by examining how earning points, establishing, and hitting goals, and cooperating with others can all help in learning (Zhao et al., 2022).

Educators considering the implementation of gamification in the learning process must be aware of both its potential benefits and drawbacks. While gamification can engage and motivate students, it is important to focus on the potential negative effects that gamification might have (Bouchrika et al., 2021; Díaz-Ramírez, 2020). According to the systematic mapping study, the use of game design elements (GDEs) such as badges may not always lead to the expected improvements and could potentially result in no effect, or even negative outcomes such as losses in performance or a reduction of intrinsic motivation (Antonaci et al., 2019; Khaldi et al., 2023). Therefore, educators should carefully design and implement gamification strategies, ensuring they align with educational goals and consider the diverse responses of students to gamified elements. Further analysis of primary studies is required to understand the specific contexts and student characteristics that influence the effectiveness of gamification (Almeida et al., 2021).

4.2 *Cognitive and non-cognitive factors in student academic performance*

Academic performance can be affected by a variety of factors, ranging from cognitive to non-cognitive elements. Cognitive factors include standardized test scores and high school grade point average (GPA), but these have been found to explain only a portion of the variance in academic performance. Non-cognitive factors, such as motivation, learning goals, and academic self-efficacy, also play a significant role. Academic burnout, personal well-being, and academic happiness are additional factors that can influence academic performance and potentially lead to school failure (Alhadabi & Karpinski, 2020; Avsec & Szewczyk-Zakrzewska, 2023).

Student goal orientation refers to the reasons or aims that guide a student's engagement in academic tasks. Research has shown that students with higher mastery goal orientations, which focus on understanding and mastering the content, tend to perform better academically. This is consistent with the findings that self-efficacious students, who believe in their ability to succeed, are more likely to have higher mastery goal orientations and, as a result, achieve better academic outcomes (Leenknecht et al., 2019; Supervía & Bordás, 2020).

Moreover, demographic factors such as gender, level of parental education, and family expectations can impact a student's persistence and academic performance. However, the predictive ability of being a first-generation college student on academic success has been found to be inconsistent across studies, with some research indicating no significant difference in academic achievement between first and non-first-generation students (Soler et al., 2022).

Non-cognitive factors such as grit, self-efficacy, achievement orientation goals, and academic performance among university students. Their study aimed to determine both the direct and indirect associations between these variables and students' GPA, utilizing a parallel and serial mediation model. The research by Bostwick et al (2020) acknowledges that while cognitive factors like standardized test scores and high school GPA explain a portion of the variance in academic performance, non-cognitive factors could account for the remaining unexplained variance. These non-cognitive factors, including students' intrinsic beliefs and perseverance, can influence the approaches and strategies they implement in academic tasks and outcomes, such as achievement goals and GPA (Bergh & Giota, 2022; Yi et al., 2021).

Students' goal orientation has been found to significantly affect academic performance, with various studies indicating that the type of goal orientation a student adopts can influence their learning strategies, engagement, and ultimately their academic success (Gjerde et al., 2022; Ni & Cheung, 2023; Usán et al., 2019). Mastery goal orientation, which focuses on learning and understanding, has been consistently linked to positive academic outcomes. Students with a mastery orientation tend to adopt deep learning strategies that contribute to their academic success. For instance, research has shown that mastery goal orientation positively affects students' use of deep learning strategies, which in turn enhances their academic achievement (Edwards et al., 2023; Guo & Leung, 2021). Performance goal orientation, which is concerned with demonstrating competence relative to others, has a more complex relationship with academic performance. While some studies have found no relationship between performance-prove orientation and performance, others have reported a positive relationship. However, performance-avoid orientation, where students aim to avoid demonstrating incompetence, is generally associated with negative academic outcomes. The interaction between goal orientation and other factors, such as feedback type, can also influence academic performance (Mose et al., 2022). For instance, students with a high learning-goal orientation who received future-oriented feedback showed greater performance improvement compared to those with different orientations or feedback types. Conversely, students with a high performance-

prove-goal orientation benefited less from future-oriented feedback, indicating that past-oriented feedback might be more effective for this group (Lin, 2021; Sánchez-Cardona et al., 2021).

Additionally, task orientation and efficacy have been found to predict academic performance, with high-performing students typically exhibiting higher levels of both types of goal orientation compared to low-performing students. However, the predictive value of goal orientation over academic performance has not always yielded clear results, with some studies indicating that task-oriented goals are associated with greater academic performance and adaptive behaviors (Didin & Kasapoglu, 2021). Moreover, improvements in students' well-being and distress are mediated by mindfulness and resilience, and to some extent, self-compassion, which could imply a positive influence on students' academic goal orientation (Medlicott et al., 2021; Sevim-Cirak et al., 2023). Goal orientation is a positive attribute, its direct impact on academic performance among accounting students may not be significant, and other factors such as the quality of education provided educators may play a more pivotal role (Karbakhsh & Safa, 2020; Mulyadi et al., 2022).

The research suggests that the alignment of students' goal orientations with their learning environment can significantly impact their motivation and academic performance. When the school context meets the developmental needs of adolescents, such as autonomy and a sense of belonging, students are more likely to be motivated and perform well academically (Erentaitė et al., 2023). In summary, goal orientation plays a key role in shaping students' academic performance, with mastery or task-oriented goals generally promoting more adaptive learning behaviors and better academic outcomes. Performance goal orientation, particularly performance-avoid orientation, tends to be associated with less favorable academic results.

4.3 Gamification and students' goal orientation in improving academic performance

Gamification in educational settings has been shown to have a positive impact on student engagement, motivation, and academic performance, which can be closely tied to students' goal orientation. Research indicates that when gamification elements are introduced into the learning environment, they can enhance students' intrinsic motivation and encourage them to focus on mastery and learning goals rather than solely on performance metrics (Chen et al., 2018; Moreira et al., 2020; Xu et al., 2021). For instance, studies have found that gamified activities can lead to superior academic performance in subjects like statistics and math, as students exposed to gamification showed increased confidence in their competencies and were more motivated to learn (Fuster-Guilló et al., 2019; Manzano-León et al., 2021). This aligns with the self-determination theory, which suggests that increased intrinsic motivation can lead to better academic outcomes.

The study conducted by Smiderle et al (2020), investigated the effects of gamification on students' learning behavior and engagement in a web-based programming learning environment. While the primary focus of the study was on engagement and learning behavior, it is reasonable to infer that these factors can have a direct or indirect impact on academic performance. For instance, increased engagement through gamification could lead to more time spent on learning activities, better retention of information, and ultimately, better performance on assessments (Smiderle et al., 2020). Moreover, gamification can influence students' achievement goal orientations by encouraging a focus on completing achievable goals and building resilience to failure (Miller et al., 2021).

The use of rewards such as badges, points, and position charts in gamified platforms has also been shown to increase the degree of student engagement and completion rates of activities, suggesting that gamification strategies can lead to higher levels of student motivation. This is particularly relevant in online learning environments, where gamification can tap into the technological familiarity of students to enhance their learning experience (Fuster-Guilló et al., 2019; Romero-Rodriguez et al., 2019).

However, it is important to note that the effectiveness of gamification in influencing goal orientation and academic performance may vary depending on the design and implementation of the gamified experience. A well-designed gamification strategy that aligns with students' intrinsic motivations and learning goals can be a powerful tool in education, but achieving this effect requires careful consideration of the students' needs and the educational context (Antonaci et al., 2019).

In conclusion, gamification can positively impact students' goal orientation by promoting mastery-approach goals and enhancing intrinsic motivation, which in turn can lead to improved academic performance. However, the success of gamification strategies depends on their thoughtful design and alignment with students' intrinsic motivations and learning goals.

4.4   Gamification design with a focus on student goal orientation

Gamification in educational settings can indeed influence the goal orientation of students, but the effects can be multifaceted and depend on how the gamification is implemented and the individual characteristics of the students (Díaz-Ramírez, 2020). For students with a mastery-approach goal orientation, gamification that focuses on skill development, personal growth, and learning can be particularly motivating. These students are driven by a desire to improve and understand the material, and gamification can provide immediate feedback and a sense of progression that aligns with their goals. However, there is a risk that extrinsic rewards such as points and badges could potentially overshadow intrinsic motivation, which is a key driver for these students (Antonaci et al., 2019; Xu et al., 2021).

Performance-approach oriented students, who are motivated by demonstrating competence and outperforming others, might find competitive elements like leaderboards and badges appealing as they provide tangible evidence of their achievements. However, an overemphasis on competition can lead to increased anxiety and stress, which could be counterproductive for their learning and well-being. Studies have shown that mastery-avoidance orientations are associated with negative academic outcomes and can be detrimental to student engagement (Howard et al., 2021). Students with a performance-avoidance goal orientation, who aim to avoid performing poorly relative to others, may experience increased pressure in a gamified environment that publicly displays performance metrics. This could lead to a negative learning experience and heightened anxiety for these students. Gamification can also lead to increased student interaction, engagement, and satisfaction when it is user-centered and considers the individualities of each student (Zainuddin et al., 2020). However, educators must be cautious as gamification can sometimes become a distraction, causing students to focus more on earning rewards than on the actual learning objectives (Klock et al., 2020; Manzano-León et al., 2021; Zhao et al., 2022).

In summary, while gamification has the potential to positively influence student motivation and engagement, educators need to consider the diverse goal orientations of students and design gamified learning experiences that are inclusive and supportive of various goals to ensure that all students can benefit from the gamification elements (Zainuddin, 2018). Students with a goal orientation may perceive the challenge of learning new technological features as an opportunity to build self-confidence and competence, thereby leading to a greater propensity to utilize new technology.

Speaking of students, goal orientation in secondary education students and higher education goal orientation have different scopes. This study focuses more on goal orientation in higher education. In secondary school goal orientation can be categorized into task-oriented goals and ego-oriented goals (Usán et al., 2019). Task-oriented goals are associated with intrinsic motivation and are positively related to better academic performance, greater perseverance, willpower, commitment to school activities, and overall psychological and emotional well-being. On the other hand, ego-oriented goals are

associated with extrinsic motivation and are negatively related to academic performance and school motivation, often involving a lack of commitment and the use of cheating techniques in class.

In higher education, the concept of achievement goal orientation has been examined to determine how it affects academic performance and student involvement. It is described as the drive or justifications pupils have for completing particular assignments. According to the study, students who have a mastery-approach perspective are more likely to participate in higher-order learning, quantitative reasoning, integrative and reflective learning, and student-faculty interaction, among other educational activities. While results performance-approach goals may lead to competition and avoidance of challenging tasks, performance-avoidance orientation consistently demonstrated a negative connection (Honicke et al., 2020; Miller et al., 2021).

Ni and Cheung (2023) found that learning goal orientation has a positive effect on perceived ease of use, which in turn contributes to technology adoption. However, it is important to note that while gamification can have positive effects on student goal orientation, it must be carefully designed to avoid potential negative impacts, such as increased anxiety or distraction from learning objectives (Chiu, 2022). The use of points, badges, and leaderboards, for example, can generate engagement and extrinsic motivation but may not necessarily lead to long-term satisfaction. Therefore, educators should consider the individual goal orientations of students when implementing gamification to ensure that it supports their learning and motivation effectively (Murillo-Zamorano et al., 2021; Xu et al., 2021).

5. Conclusion

Gamification in educational settings has been shown to increase student engagement and motivation. The use of game elements such as points, badges, and leaderboards can create a more dynamic and interactive learning environment that encourages students to participate more actively in their education. Gamification can influence students' goal orientations by providing structures that support mastery-approach goals (focusing on learning and understanding) and performance-approach goals (focusing on achieving and outperforming others). However, it is important to design gamified elements carefully to avoid exacerbating mastery-avoidance or performance-avoidance orientations, which are associated with negative academic outcomes.

The effectiveness of gamification can vary based on individual student characteristics, such as personality traits and intrinsic motivation. Personalized gamification strategies that cater to different student profiles may be more effective in enhancing engagement and performance. There is evidence that gamification can have a sustained impact on student engagement, with some students continuing to use gamified platforms even after completing their courses. However, more research is needed to understand the long-term academic and motivational effects of gamification.

For further study, there is need for research into adaptive gamification systems that can tailor the learning experience to individual student profiles, including their goal orientations and learning preferences. This could involve developing dynamic player profiles and exploring how different game elements affect students with various goal orientations.

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