# Gamifying University Writing Centers: An Immersive Learning Experience for Learners with Disabilities

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🆔 **Filomachi Spathopoulou**

*American University of the Middle East, Kuwait.*
*Email: Filomachi.spathopoulou@aum.edu.kw Tel: +965 94915384*

## ABSTRACT

Starting with the assumption that the inclusion of gamified concepts in the curricula of higher education institutions can bring some novelty to the course materials and encourage active participation, the objective of this article is to examine the extent to which gamification can improve the writing skillset of university students and their motivation, engagement, and performance levels. The article examines gamification through an in-depth and evidence-based discussion that looks into available evidence indicating an abundance of advantages of gamifying higher education courses while at the same time considering the challenges of integrating and implementing gamification into classroom/learning environments. Reference is made to specific games and how they have been used by writing programs in a number of higher education institutions. The discussion includes workable suggestions on how gamification could help University Writing Centers attract students as well as provide better services, especially with regards to students with learning challenges. The article concludes that the best approach to making gamified writing more appealing to students is to follow a framework where the mechanics, dynamics, and emotion elements of the game are tailored to the objectives of the writing course as well as the unique needs and preferences of the learners.

*Keywords:* *Gamified writing, GWrit, Gamified learning, Writing games, Twine, Multiliteracy, Learning disabilities, Gamified writing centers.*

**Highlights of this paper**
- This study contributes in the existing literature on the application of serious games in the context of higher education by focusing on University Writing Centers.
- It is one of a small number of studies which looks into the possibility of incorporating the game learning theory into Writing Centers' practices with the aim of better serving learners with disabilities.

## 1. INTRODUCTION

Games – used here exclusively in reference to video or computer games – have been a great source of enjoyment for years and will continue to be so Figure 1 (Subhash & Cudney, 2018). Indeed since its commercial inception in the '50s and '60s as a technical oddity, gaming has bloomed into one of the world's most lucrative industries (Chikhani, 2015). In 2020, for instance, the worldwide revenue from the PC gaming market stood at approximately $37 billion, while the mobile gaming segment generated over $77 billion (Clement, 2021). What is even more significant, particularly within the context of this study, is that despite the high average time spent among kids playing games (roughly 2-17hrs daily among boys), gaming can no longer be regarded exclusively as child's play. In fact, industry reports, have found that video gaming is fast gaining popularity among adults as well – and with a roughly even split with regards to gender distribution (Clement, 2021). But for gamers below 18 years, newer statistics reveal that the number of adult women gamers significantly outnumbers males. These figures show that games have not just a wide but also a growing appeal, and every person, regardless of gender, has the capacity to enjoy them.



**Figure 1.** Number of active video gamers 2015 – 2020 (Gilbert, 2021).[1]

The rising popularity of gaming is due to its ability to stir a range of positive emotions in humans, including feelings of being engaged, focused, and accomplished. According to Subhash and Cudney (2018) people tend to become more motivated and productive during games. This potential has been harnessed through what is now widely known as "gamification" – a concept first documented in 2018 which broadly describes the application of mechanics primarily related to game design in settings or contexts that are not related to games (Quan & Zhang,

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[1]The graph depicts the trends in the global number of active video gamers in billions. As of 2020, there were an estimated 2.69 billion gamers worldwide. Based on a 3.6% YoY forecast, this number will grow to 3.07 billion by 2023.

2021; Šćepanović, Zarić, & Matijević, 2015). With the potential to influence human behavior, gamification has been applied in various contexts, including but not limited to business and marketing. And now, studies (e.g., (Murillo-Zamorano, López Sánchez, Godoy-Caballero, & Bueno Muñoz, 2021; Quan & Zhang, 2021; Subhash & Cudney, 2018; Wang, 2021)) say that the same could be applied to learning. When applied to education, gamification can be best thought of as the process or approach of motivating and engaging learners in their learning process by including game design elements and principles (Díaz-Ramírez, 2020).

As a growing driving force in higher education, the ensuing analysis explores extant literature to examine the benefits (or lack thereof) of gamifying higher education writing courses. Available evidence indicates that the advantages of gamifying higher education courses abound and include, among others, the provision of alternative learning paths, improved student engagement and participation (Barna & Fodor, 2018) improved academic performance, and positive effects on other desirable behaviors of social relatedness such as collaboration, teamwork, and a sense of belonging (Díaz-Ramírez, 2020). Challenges, however, exist, including (1) lack of resources and (2) challenges integrating and implementing gamification into classroom/learning environments (Coutinho, 2019). In the subsequent analysis, the concept of gamification, as the utilization of game design elements in a classroom or learning space, is examined through an in-depth and evidence-based discussion of its benefits and challenges in higher education writing courses. Workable suggestions on how the technique could help writing centers attract students as well as provide better services, especially with regard to students with learning challenges, are also articulated.

## 2. BENEFITS OF GAMIFIED WRITING

Academic writing is a vital skill required in undergraduate courses. It not only helps in developing competencies such as critical thinking and problem-solving but also provides a channel for demonstrating comprehension of content, recalling information, and applying concepts to professional scenarios or actual practice (El Tantawi, Sadaf, & AlHumaid, 2016). Course-embedded tutors themselves must also be well trained to deal with different students and writing assignments. Writing centers can utilize various game features such as fantasy, goals, challenges, and competition to create writing games that address specific writing needs. This way, writing centers can transform into "multiliteracy centers," where oral and visual aspects of composition design are added to the traditional written component (Pierce & Robison, 2022). However, developing these skills is a challenging endeavor because of prioritization of other skills (especially in scientific courses), difficulty in assessing and monitoring progress objectively and efficiently, and the lack of interest among students who find writing training less engaging than the courses or content related directly to their professional goals (El Tantawi et al., 2016).

Various universities are experimenting with gamification in different courses to realize improvements in student engagement, performance, and motivation. Ly (2021) examined the use of gamification in teaching summary writing to first-year students. The assumption was that the inclusion of gamified concepts in the curriculum would bring some novelty to the course materials and encourage active participation. Digital badges were the gamification elements used in the study to both motivate the students and symbolize their credentials. Seventeen students whose goal was to earn badges participated in the study. The findings showed that 64.7% admitted that the badges drove them to understand summary conventions, while 47% revealed that gamification improved their summary writing skills.

The effectiveness of gamified badges in enhancing learning outcomes was reiterated in Antonaci, Klemke, and Specht (2019). The study examined the impact of gamification on online learning environments, specifically in

MOOCs (Massive Online Open Courses). The findings demonstrated the ability of gamified badges to improve the level of carefulness in performing tasks, engagement, time management, enjoyment, and emotional states.

Gibbens, Gettle, Thompson, and Muller (2015) examined the use of gamification in teaching scientific writing to undergraduate students taking biology classes. The researchers created Playon Words – a computer game to teach students about sentence structure, scientific style, organization, and referencing styles. The goal was to develop their writing skills, reduce the occurrence of common writing mistakes, and enable instructors to offer the required writing instruction without taking too much of the already constrained class time. The writing game was presented as extra credit in the biology course at Minnesota University, with 77 students choosing to participate. From the findings, almost 90% of the participants admitted learning helpful tips after playing the game. The motivation for the game arose from the extra credit assigned to the students.

Another gamification initiative – GWrit (the Game of Writing) – created an online writing environment that allows writers to break up their writing assignments into smaller tasks with specific milestones (Rockwell, Graves, Graves, & Chartier, 2021). It also allows competition among participants undertaking similar tasks. To measure the level of engagement of participants, GWrit encourages bragging and documenting of progress. The University of Alberta recently adopted the project to support research and level 1 writing courses by offering various composing and reviewing tools, writing models, and research guidance. As such, GWrit promises to give more control and autonomy to students over their learning. Even after completing the course, those who wish to continue developing their writing skills can do so throughout their undergraduate program (Rockwell et al., 2021). Besides, the analytics and gamification features offer feedback and encouragement necessary for self-evaluation. Secondly, by providing multiple ways for them to interact with their peers, instructors, and alumni, GWrit can significantly improve student writing, especially in their weak areas.

Pierce and Robison (2022) used Twine (an open-source platform for running interactive fiction games) to train consultants at a writing and communication center at Nova Southeastern University. The consultants reported high relevance of the classroom-based scenarios offered in the Twine tutoring game. However, they decried low interactivity within the game, highlighting the importance of making the writing games more expressive and interactive to increase engagement.

El Tantawi et al. (2016) assessed the effectiveness of gamifying academic writing in an undergraduate dental course. Ninety-two first-year students participated in the four-month study, with a pre-and post-intervention assessment conducted on the satisfaction levels of the participants. The findings from 87 participants who were available for analysis showed significant improvement in writing scores from 35.6 at the beginning of the study to 80 in the final assessment. However, the satisfaction was modest – an outcome attributed to the mandatory nature of the course. The regression analysis uncovered a positive association between satisfaction with playing and improvement in writing skills. The improvement in learning can be justified by the gamified learning theory, which argues that gamification does not affect learning directly but inspires a learning-oriented attitude or behavior through moderation or mediation (Zaric, Roepke, Lukarov, & Schroeder, 2021). The moderation effect of gamification occurs between the quality of instruction and learning, while the mediating effect occurs between game elements and learning. As such, to improve the efficacy of existing instructions, gamification must successfully change the learner's behavior or attitude.

Despite the differences of the various initiatives, the results show that the ability of gamification to inspire students lies in the theory of motivation. Ofosu-Ampong (2020) argues that according to the self-determination theory (SDT), which emphasizes the tendency toward growth, gameplay is guided by intrinsic motivation.

## 3. CHALLENGES FACING GAMIFIED WRITING

Unfortunately, the introduction of gamification in education can also result in negative outcomes, including (1) loss of performance, (2) undesired behavior, (3) indifference, and (4) declining effects on motivation and engagement (Toda, Valle, & Isotani, 2017). Gamification can sometimes prevent learning when students do not understand the rules, are demotivated when they are penalized in the game or are more fixated with the gamified mechanics than on the educative assessment. As a result, their performance in the gamified activity becomes poor. The most common undesired behavior is excessive competition. Competition can be a great motivator and morale booster at moderate levels and is accompanied by camaraderie and willingness to help struggling peers. On the other hand, excessive competition kills morale within the group and hinders peer learning. Leaderboard ranking of players can also make those at the bottom to lose confidence in themselves, leading to psychological harm. The other negative effect is indifference, where gamification has no impact on the learners. Some students simply prefer traditional methods of learning over gamification. In addition, the initial positive effects of gamification on motivation and engagement decline gradually over time (Toda et al., 2017). Students tend to lose interest in repeated plays, especially if the activity is not interactive enough or the students do not understand the rules.

Costs and time constraints also undermine the use of gamification in education. Designing and implementing gamification can be expensive for cash-strapped learning institutions. The costs vary according to the type of system being used. The costs revolve around equipment purchase and installation, software acquisition, training instructors and teachers, and providing support and maintenance to the systems delivered online or hosted in the campus environment (Top Hat, 2021). The costs are either borne by the learning institution or may be passed on to the learners through purchases of course codes or registration fees, thus creating barriers to entry. In addition, it takes time to learn the games. One must repeatedly play since the rules keep changing with each new scenario, yet the time pressures imposed by other day-to-day activities such as job demands require much time and attention, meaning that learners will only play a few tasks at a time. As a result, they may not get the full learning experience expected from the gamified content.

Badge fatigue is also a likely problem. In normal video games, the players have to surmount several obstacles for a variety of nifty gifts such as added lives, new outfits, new abilities, and new weapons. In comparison, learners are asked to accomplish tasks simply to get the same digital rewards. Because the badges are monotonous, unappealing, and are realized systematic and predictable way, they can lead to gaming fatigue and indifference among students (Motrain, 2020). Besides, the badges have no personal connection with the students and offer no choice. Thus, learners need a dynamic reward system that changes over time, allows them to select their preferred rewards, and is customized to accommodate the unique interests of each.

## 4. BEST PRACTICES FOR BETTER SERVICES & ATTRACTING STUDENTS

These studies prove that gamification can be a useful tool in improving the learning outcomes for writing courses by framing some units as games. This way, students can easily understand the crucial writing skills prescribed by the US CWPA (the Council of Writing Program Administration) and other such national associations that direct writing programs in higher education centers in other countries. The novelty of gamification stems from its highly interactive approach to learning which stimulates students' interest in learning by giving them control over their progress and rewarding them for attaining specific goals or milestones (Ly, 2021). This way, attention span, and cognitive growth increase while the typical disruptive classroom behavior reduces.

One approach proposed for gamifying writing is Robson, Plangger, Kietzmann, McCarthy, and Pitt (2015) MDE (mechanics, dynamics, and emotions) framework (see Figure 2) (Robson et al., 2015). Mechanics deals with

the setup, rules, and progression of the game and includes the setting, goals, rules, context, boundaries, and types of interactions. Mechanics remain constant even as the players change. Dynamics refer to the behaviors and strategic actions of the participants that emerge from playing the game. The typical behaviors in such settings include competition, bragging, cooperation, and cheating, among others. For example, when spectators or observers are added to the environment, player dynamics tend towards competition, with players showing less willingness to concede defeat, quit, or settle so as to avoid looking bad in front of their peers. Emotions refer to the affective responses exhibited by participants when playing the game. The feeling sought after in gamified learning is excitement, fun-oriented, or enjoyment because it drives them to continue playing despite feeling momentary disappointment or sadness for losing a game or failing to get a reward. Therefore, constructing a writing assignment that incorporates all three elements is more effective in engaging students.
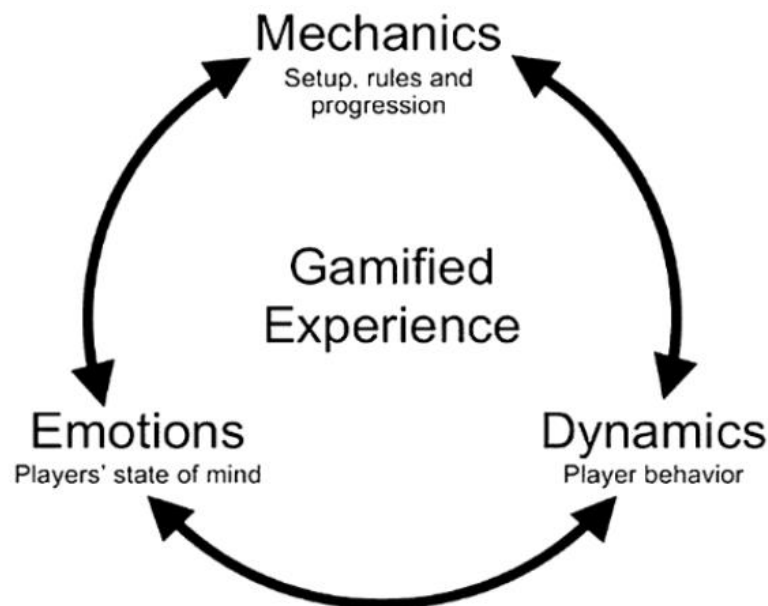


**Figure 2.** The MDE framework (Robson et al., 2015)[2].

From the discussion, an important factor that determines the level of engagement or satisfaction with gamified writing projects is whether the program is mandatory or voluntary. Where the gamified writing courses are compulsory, students have no choice but to participate since the outcome impacts their grades. As such, their satisfaction and engagement levels may be muted. The opposite is the case where the gamified writing courses are voluntary. Certain gamification elements also emerge as the most fundamental, with broad usage in education settings. For mechanisms, best-practice include (1) incremental progression, (2) use of badges as rewards, (3) onboarding through tutorials, and (4) offering instant feedback (Oxford Analytica & World Government Summit, 2016).

Incremental progression allows players to solve problems, get rewards then move to slightly more difficult tasks. Easy tasks are boring to learners, while very difficult tasks can overwhelm learners. Thus, the degree of difficulty needs to be balanced. In the short-term, replacing a completed task with a tougher one keeps the learners stimulated while their skills develop. The badges symbolize achievement. They act as the intermediate goals that keep players focused on the tasks. The onboarding experience (i.e., a player's first interaction with the game)

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[2] From the figure, the three gamification principles are interdependent. Changes in one element affect the other two, resulting in different experiences for the players.

matters. Typical video games have tutorials that guide players through their first game to familiarize them with mechanisms and goals. When applied to gamified educational content, onboarding tutorials not only help reduce uncertainty among learners but also save time that teachers would have otherwise spent on explaining how the programs work.

Feedback mechanisms provide players with prompt information on the consequences of the choices and actions they make during a game. On the other hand, in traditional educational settings, feedback cycles are too long due to delays in marking submitted assignments. In addition, students have to wait until the final grade is computed when the year ends. Therefore, gamification helps speed up feedback to allow students to gauge their performance. Learners' status can be made visible through avatars, usernames, or handles. The other important elements are collective responsibility with respect to group-based activities and leaderboard rankings of players to encourage healthy competitions. Important elements also include creating playful challenges or barriers, creating competition with classmates, offering a personalized breakdown of student performance after completing each level (i.e., the strengths, weaknesses, points, and ranking), and offering a multiplicity of roles (e.g., as a player or judge) (True Education Partnerships, 2020).

## 5. GAMIFICATION FOR LEARNING DISABILITIES

Students with learning disabilities find it hard to learn in traditional classrooms, causing lower performance than other students. For instance, those with intellectual disabilities have significantly impaired conceptual, adaptive, social, and motor skills, which reduce their motivation and engagement levels (Tlili et al., 2021). Other kinds of disabilities include cerebral palsy, language impairment, and dyslexia, which complicate reading and writing. The main obstacles to literacy development in these students include difficulties with memory, grasping abstract concepts, lack of parental involvement, frequent absenteeism, time constraints, morphological and grammatical complexity, and a non-accommodative curriculum (Chan, Santally, & Whitehead, 2022). Gamification can thus help reduce this achievement gap by keeping them motivated. Some studies have found demonstrated the possibility of enhancing the concept of numbers among learners with intellectual disabilities while improving memory in deaf learners (Chan et al., 2022).

However, special education specialists and instructors should be included in the design process to offer unique insight into the needs and desired physical and cognitive skills of these learners. In addition, the process of making special needs students in the game design process helps them develop new ways of thinking while ensuring technological fluency. The beneficial approach is differentiating the games based on cognitive characteristics such as memory abilities, comprehension skills, and visual attention to help develop specific deficiencies (Chan et al., 2022). Other recommendations given by the study include using familiar and unambiguous words, using short and simple game instructions, giving few choices, using the same game items in the same position to help in memory and recall, avoiding distracting stimuli by using single interaction communication or task, giving immediate feedback due to their short attention spans, and lastly, emphasizing single-player, brain-teasing, progress-oriented games.

## 6. CONCLUSION

Gamification is increasingly being implemented in educational environments to improve learning outcomes as well as automate the teaching process. In the context of higher education, gamification is expected to motivate students to take charge of their learning, especially given the time pressures on normal classroom periods. Gamification also helps students forge social connections with both the faculty and peers through competition and collaboration. Unlike the traditional learning model n which students sit for hours listening to monotonic lectures,

gamified content is interactive and immersive, making learning fun and rewarding. Thus, gamification can improve the writing skillset of university students and their motivation, engagement, and performance levels. On the downside, gamified writing is linked to challenges such as performance loss associated when penalized in the game, undesired behavior such as cheating and excessive competition, indifference and reward/badge fatigue, declining motivation and engagement as the novelty wears off, and time and cost constraints. The best approach to making gamified writing more appealing to students is following the MDE framework during the gamification design process. Here, the mechanics, dynamics, and emotion elements of the game should be tailored to the objectives of the writing course and the unique needs and preferences of the learners. Other best practices include incremental progression, using badges as rewards for level completion, onboarding new learners through tutorials, and offering instant feedback.

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