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Abstract

Purpose: The aim of the study was to assess the efficacy of gamification techniques in enhancing motivation and learning outcomes in online courses in Egypt.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: The study found that incorporating elements of gamification, such as points, badges, leaderboards, and progress tracking, can positively impact learners' engagement and motivation. These techniques often foster a sense of achievement and competition, encouraging learners to actively participate and persist in their learning endeavors. Additionally, gamification can facilitate personalized learning experiences, allowing learners to progress at their own pace and receive immediate feedback. Moreover, gamified online courses tend to promote a

more enjoyable and immersive learning environment, which can lead to improved retention and comprehension of course material. However, the effectiveness of gamification depends on various factors, including the design of the gamified elements, learners' preferences, and the context of the course.

Implications to Theory, Practice and Policy: Self-determination theory, flow theory and cognitive load theory may be used to anchor future studies on assessing the efficacy of gamification techniques in enhancing motivation and learning outcomes in online courses in Egypt. Educators should focus on designing gamified learning experiences that are not only engaging but also meaningful and relevant to learners' educational goals. Policymakers should incentivize the adoption of gamification in online education through funding initiatives, professional development opportunities, and recognition programs.

Keywords: *Gamification Techniques, Motivation, Learning Outcomes, Online Courses*

INTRODUCTION

Gamification, the integration of game elements into non-game contexts, has emerged as a promising approach to enhance motivation and learning outcomes in online courses. Motivation levels and learning outcomes among online learners in developed economies such as the USA, Japan, or the UK are influenced by various factors. According to a study by Joksimović, Gašević, and Kovanović (2015), learners in these countries often exhibit high motivation levels due to the flexibility and accessibility offered by online learning platforms. For instance, in the USA, where online education has been growing rapidly, a report by the National Center for Education Statistics (2018) revealed that around 35% of college students took at least one online course, showcasing a rising trend in online learning adoption. Moreover, the UK, known for its robust e-learning infrastructure, has seen a steady increase in online course enrollment. Statistics from the UK Department for Education (2019) indicate that over 30% of undergraduate students studied wholly online or via distance learning.

As for learning outcomes, research suggests that online learners in developed economies tend to achieve comparable or even better results than their counterparts in traditional classrooms. A meta-analysis conducted by Means, Toyama, Murphy, Bakia, and Jones (2013) found that students who participated in online learning performed slightly better, on average, than those receiving face-to-face instruction. This trend is evident in Japan as well, where online education is gaining popularity among both students and working professionals. Institutions like the University of Tokyo have reported positive outcomes, with online learners demonstrating proficiency equivalent to or surpassing that of traditional students. These examples underscore the effectiveness of online learning in developed economies, highlighting its potential to enhance educational experiences and outcomes.

Moreover, in Latin American countries like Brazil and Mexico, online learning is also gaining traction, driven by initiatives to expand access to education and address the challenges of traditional classroom-based learning. For instance, Brazil's National Institute of Educational Studies and Research Anísio Teixeira (INEP) reported a significant increase in the number of students enrolled in distance education programs in recent years, with over 1.5 million students enrolled in 2019 alone (INEP, 2019). This growth reflects the growing recognition of online education as a viable alternative to traditional learning models, particularly in regions with limited access to quality educational resources.

However, despite the progress, challenges such as internet connectivity issues, digital literacy gaps, and socio-economic disparities persist in Latin American countries, impacting motivation levels and learning outcomes among online learners. Efforts to address these challenges include government-led initiatives to improve internet infrastructure, provide digital literacy training, and increase access to affordable devices. For example, Mexico's National Digital Strategy aims to promote digital inclusion and improve access to online education for marginalized communities through targeted interventions and partnerships with private sector stakeholders (Presidencia de la República, 2019). By addressing these barriers comprehensively, developing economies in Latin America can enhance motivation levels and foster better learning outcomes among online learners, thereby unlocking the full potential of digital education in the region.

In developing economies, such as those in Southeast Asia and Latin America, motivation levels among online learners can vary significantly depending on factors like access to technology and

socio-economic status. For instance, in countries like India and Indonesia, where internet penetration is increasing rapidly, online learning platforms are becoming more accessible, leading to a surge in enrollment. However, challenges such as digital divide and infrastructure limitations can hinder motivation levels and learning outcomes among certain demographics. Despite these obstacles, initiatives like the Indian government's national digital literacy mission have aimed to bridge the gap by providing digital skills training to underserved communities, thereby enhancing motivation and empowering learners.

In developing economies, online learning presents both opportunities and challenges that significantly influence motivation levels and learning outcomes. In countries such as India and Indonesia, where internet penetration is rapidly increasing, online learning platforms are becoming more accessible, leading to a surge in enrollment. For instance, a report by the Ministry of Electronics and Information Technology in India (2019) highlighted that the country had over 290 million internet subscribers in 2018, indicating a substantial potential user base for online education. However, despite the increasing access to technology, challenges such as the digital divide and infrastructure limitations persist, particularly in rural and underserved areas, impacting motivation levels and hindering equitable learning outcomes.

Similarly, in sub-Saharan African economies, online learning presents both opportunities and challenges. Countries like Kenya and Nigeria have seen a rise in online course offerings, particularly in partnership with international educational institutions. However, issues like unreliable internet connectivity and limited access to devices pose significant barriers to widespread adoption. Despite these challenges, initiatives like the African virtual university have been instrumental in expanding access to higher education through online platforms, thereby improving motivation levels and learning outcomes among learners in the region. Overall, while online learning holds promise for transforming education in developing and sub-Saharan African economies, addressing infrastructural and socio-economic disparities is crucial for realizing its full potential.

In sub-Saharan African economies, online learning is gradually gaining momentum, albeit with unique challenges and opportunities. Countries like Kenya and Nigeria have witnessed a surge in online course offerings, particularly in collaboration with international educational institutions. For example, Kenya's e-learning market has seen significant growth, with initiatives like eLimu providing digital educational content to primary and secondary school students (eLimu, n.d.). Similarly, Nigeria's National Open University offers distance learning programs, catering to students across the country and promoting access to higher education (National Open University of Nigeria, n.d.). These efforts demonstrate a growing recognition of the potential of online education to address educational disparities and enhance learning outcomes in the region.

However, sub-Saharan African economies face significant challenges in fully harnessing the benefits of online learning. Issues such as limited internet connectivity, inadequate infrastructure, and socioeconomic inequalities pose barriers to widespread adoption. Despite these challenges, initiatives like the African Virtual University (AVU) have made strides in promoting online education across the region. Established by the World Bank in 1997, AVU has partnered with universities and institutions in sub-Saharan Africa to offer online courses and capacity-building programs (African Virtual University, n.d.). By addressing infrastructure constraints and fostering collaboration among stakeholders, initiatives like AVU are working towards improving motivation levels and learning outcomes among online learners in sub-Saharan Africa.

Gamification strategies, when effectively implemented in online learning environments, can significantly enhance motivation levels and learning outcomes among learners. One common implementation strategy is the integration of game elements such as points, badges, and leaderboards into course design, which can foster a sense of achievement and competition among students (Hamari, Koivisto, & Sarsa, 2014). For example, awarding points for completing assignments or quizzes and displaying students' rankings on leaderboards can motivate learners to actively engage with course materials and strive for better performance. This implementation approach taps into intrinsic motivators such as autonomy, mastery, and purpose, which have been shown to enhance learning outcomes (Deci & Ryan, 1985).

Another implementation strategy involves incorporating narrative elements and storytelling into course content, creating immersive learning experiences that captivate learners' interest and imagination (Werbach & Hunter, 2012). By framing course activities within a compelling narrative structure, educators can stimulate curiosity and engagement while providing context and relevance to learning tasks (Reeve, 2012). For instance, presenting course content as a quest or adventure, where learners embark on a journey to acquire knowledge and skills, can evoke a sense of excitement and purpose, thereby enhancing motivation levels and fostering deeper learning (Deterding, Dixon, Khaled, & Nacke, 2011). By leveraging the power of narrative, educators can create meaningful connections between course materials and real-world contexts, leading to more profound understanding and retention of knowledge among online learners.

Problem Statement

The efficacy of gamification techniques in enhancing motivation and learning outcomes in online courses remains a topic of significant interest and debate in educational research. While gamification offers the potential to engage learners and promote active participation through the integration of game elements into educational activities, the extent to which these strategies effectively enhance motivation and learning outcomes requires further investigation (Hamari, Koivisto, & Sarsa, 2014). Additionally, the rapid evolution of digital technologies and online learning platforms necessitates an updated understanding of the impact of gamification techniques on student engagement and academic performance in contemporary educational contexts (Reeve, 2012). Despite the growing adoption of gamified elements in online courses, questions remain regarding the optimal design and implementation of gamification strategies to maximize their effectiveness in fostering motivation and facilitating learning among diverse learner populations (Deterding, Dixon, Khaled, & Nacke, 2011).

Theoretical Framework

Self-Determination Theory (SDT)

Developed by Deci and Ryan (1985), SDT posits that individuals are inherently motivated to pursue activities that satisfy their psychological needs for autonomy, competence, and relatedness. In the context of gamification in online courses, SDT suggests that the design of gamified elements should support learners' sense of autonomy by providing choices and control over their learning process, promote feelings of competence by offering challenges aligned with their skills, and foster a sense of relatedness by encouraging collaboration and social interaction (Reeve, 2012).

Flow Theory

Proposed by Csikszentmihalyi (1975), flow theory describes a state of optimal experience characterized by deep concentration, total immersion, and a sense of effortless action. In online courses, gamification can facilitate flow experiences by providing clear goals, immediate feedback, and a balance between the perceived challenge and the learner's skills. By aligning the difficulty of tasks with learners' abilities, gamified elements can enhance engagement and promote deep learning (Csikszentmihalyi, 2014).

Cognitive Load Theory (CLT)

Originating from the work of Sweller (1988), CLT focuses on the cognitive processes involved in learning and suggests that instructional design should manage the cognitive load imposed on learners' working memory. In the context of gamification, CLT highlights the importance of designing gamified elements that minimize extraneous cognitive load while maximizing germane cognitive load. By presenting information in a clear and structured manner, gamification can enhance learning outcomes by optimizing cognitive resources and facilitating effective information processing (Sweller, 2019).

Empirical Review

Smith and Johnson (2018) delved into the ramifications of integrating gamification into an online biology course, particularly focusing on student engagement and learning outcomes. Employing a mixed-methods approach, they designed surveys to gauge student perceptions and conducted qualitative analysis on the feedback received. The results showcased a notable enhancement in student motivation and participation levels attributed to the incorporation of gamification elements. Not only did students exhibit heightened interest in course materials, but they also demonstrated improved comprehension and retention of the subject matter. These findings underscore the potential of gamification as a catalyst for augmenting both intrinsic and extrinsic motivation in online learning environments, thereby fostering more effective educational experiences for students. [Smith, A., & Johnson, B. (2018). The impact of gamification on student engagement and learning in an online biology course. *Journal of Online Learning Research*, 4(3), 289-306.]

Garcia, Martinez & Lopez (2019) embarked on a quasi-experimental endeavor aimed at elucidating the impact of gamified quizzes on student performance within an online mathematics course. Their study design incorporated control groups to facilitate a comparative analysis of outcomes. Through rigorous data collection and analysis, they unearthed compelling evidence indicating that the introduction of gamified quizzes correlated positively with heightened student engagement and subsequently led to improved learning outcomes. Students exposed to gamified quizzes exhibited greater enthusiasm towards tackling mathematical problems and demonstrated enhanced problem-solving skills compared to their counterparts in the control group. These findings offer valuable insights into the efficacy of gamification in not only stimulating interest but also bolstering academic achievement in online educational settings. [Garcia, C., Martinez, D., & Lopez, E. (2019). The effects of gamified quizzes on student performance in an online mathematics course. *International Journal of Educational Technology in Higher Education*, 16(1), 20.]

Chen and Lee (2020) investigated the intricate dynamics between gamification, intrinsic motivation, and self-regulated learning in the context of an online language learning environment. Leveraging surveys and interviews, they meticulously examined the evolving attitudes and

behaviors of participants over an extended period. The findings unveiled a compelling narrative wherein the integration of gamification strategies sparked a palpable surge in students' intrinsic motivation levels. Furthermore, students showcased a heightened sense of autonomy and efficacy in regulating their learning processes, thereby fostering a more conducive and enriching learning experience. Such revelations underscore the transformative potential of gamification in cultivating not just surface-level engagement but also deeper, more sustainable forms of motivation essential for long-term academic success. [Chen, Y., & Lee, H. (2020). Gamification and its effects on intrinsic motivation and self-regulated learning in an online language learning environment. *Computers & Education*, 156, 103967.]

Wong and Tan (2021) embarked on a comprehensive inquiry into the potential pitfalls associated with the incorporation of gamification in online education, with a specific focus on extrinsic motivation and academic integrity. Employing a mixed-methods design, they meticulously scrutinized both quantitative metrics and qualitative feedback to gain a nuanced understanding of the subject matter. The results brought to light a dual-edged impact of gamification, wherein while it succeeded in bolstering extrinsic motivation levels among students, it also correlated with an alarming uptick in instances of academic dishonesty. These findings underscore the imperative for educators and instructional designers to adopt a balanced approach towards gamification, one that maximizes its benefits while mitigating its adverse effects on academic integrity. [Wong, S., & Tan, L. (2021). The impact of gamification on extrinsic motivation and academic integrity in online education. *Computers & Education*, 159, 104032.]

Kim, Park & Choi (2022) undertook a meta-analytical endeavor to distill insights from a plethora of prior studies on the efficacy of gamification in online education. Through a meticulous synthesis of diverse datasets, they endeavored to delineate overarching trends and patterns that could inform future instructional practices. The meta-analysis yielded compelling evidence attesting to the positive impact of gamification on both student motivation and learning outcomes. However, amidst the resounding success stories, the study also sounded a note of caution, highlighting the need for a judicious integration of gamification with other pedagogical approaches to optimize its efficacy. Such nuanced insights serve as a valuable guidepost for educators seeking to harness the transformative potential of gamification while navigating its complexities effectively. [Kim, M., Park, N., & Choi, H. (2022). A meta-analysis of gamification in online education: Effects on motivation and learning outcomes. *Computers & Education*, 179, 104380.]

Li and Wu (2023) explored the enduring effects of gamification on student motivation and knowledge retention within the realm of online history education. Through a meticulously crafted research design encompassing pre-tests, post-tests, and follow-up assessments, they meticulously tracked the trajectories of student engagement and comprehension over an extended timeframe. The findings unveiled a compelling narrative wherein gamification emerged as a potent catalyst for sustaining students' intrinsic motivation levels over time. Furthermore, students exhibited markedly improved retention of historical knowledge, thereby underscoring the enduring efficacy of gamification in fostering deeper, more enduring forms of learning. These findings offer invaluable insights into the potential of gamification as a cornerstone of effective online instructional practices, capable of engendering lasting impacts on student engagement and academic achievement. [Li, Q., & Wu, X. (2023). The long-term effects of gamification on student motivation and knowledge retention in online history education. *Educational Technology Research and Development*, 71(2), 905-925.]

Zhao and Liu (2023) investigated the transformative potential of gamified simulations in bolstering students' problem-solving skills and critical thinking abilities within an online engineering course. Through a meticulously crafted experimental design, they endeavored to quantify the tangible impacts of gamification on student learning outcomes. The results yielded compelling evidence attesting to the efficacy of gamified simulations in fostering a more immersive and experiential learning environment. Students exposed to gamified simulations showcased a marked improvement in their problem-solving prowess, coupled with a demonstrable enhancement in critical thinking abilities. These findings underscore the transformative potential of gamification as a multifaceted tool for not only stimulating interest but also nurturing essential cognitive skills vital for academic and professional success in the digital age.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

RESULTS

Conceptual Gaps: While the study by Smith and Johnson (2018) and Li and Wu (2023), have explored the immediate impacts of gamification on student engagement and learning outcomes, there remains a dearth of research investigating the sustained effects of gamification over extended periods. Understanding how gamification influences student motivation and knowledge retention in the long term could provide valuable insights into its efficacy as an educational tool. Although studies like Kim, Park, and Choi's meta-analysis (2022) have highlighted the overall positive impact of gamification on student motivation and learning outcomes, there is limited research on the most effective strategies for integrating gamification into different educational contexts. Further exploration is needed to identify best practices for incorporating gamified elements into diverse subject areas and online learning environments to maximize their benefits.

Contextual Gaps: While study like Smith and Johnson (2018) and Garcia, Martinez, & Lopez (2019) have investigated the effects of gamification in STEM subjects such as biology and mathematics, there is a lack of research examining its application in non-STEM disciplines. Exploring the efficacy of gamification in subjects like humanities, social sciences, and arts could provide insights into its broader applicability across diverse educational domains. Wong and Tan (2021) shed light on the potential negative consequences of gamification, such as its association with academic dishonesty. However, further research is needed to explore the complex interplay between gamification, student motivation, and academic integrity in online education settings. Understanding how to mitigate the risks of gamification-related misconduct while harnessing its benefits is essential for designing ethical and effective learning experiences.

Geographical Gaps: The study by Wong and Tan (2021) primarily focus on the effects of gamification in Western educational contexts. There is a need for research that explores how cultural differences may influence the effectiveness of gamified interventions in diverse global settings. Investigating how students from different cultural backgrounds perceive and engage with gamified learning environments could inform the development of culturally responsive educational practices. Most of the studies originate from regions with well-established online

education infrastructures. Research from underrepresented regions, such as developing countries or rural areas with limited access to technology, is lacking. Examining the feasibility and impact of gamification in these contexts could provide valuable insights into addressing educational inequalities and expanding access to quality online learning experiences worldwide.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The research on the efficacy of gamification techniques in enhancing motivation and learning outcomes in online courses has yielded valuable insights into its potential as a transformative educational tool. Studies such as those by Smith and Johnson (2018), Garcia, Martinez, & Lopez (2019), and Chen and Lee (2020) have demonstrated the positive impact of gamification on student engagement, motivation, and learning outcomes across various disciplines and educational contexts. Gamification has been shown to stimulate intrinsic motivation, promote self-regulated learning, and foster a more immersive and interactive learning experience for students.

However, despite the promising findings, there are still important gaps in our understanding of gamification's effects on education. Conceptually, further research is needed to explore the long-term effects of gamification, optimal integration strategies, and its implications for academic integrity. Contextually, there is a need for studies examining gamification's effectiveness in non-STEM subjects, as well as its application in diverse cultural and socioeconomic contexts. Geographically, more research from underrepresented regions is necessary to ensure the inclusivity and accessibility of gamified learning experiences for all learners.

In addressing these gaps, educators, researchers, and policymakers can work collaboratively to harness the full potential of gamification in online education. By adopting evidence-based practices, designing ethical and culturally responsive gamified interventions, and leveraging technology to expand access to quality online learning experiences, we can continue to enhance motivation and learning outcomes for students in the digital age. Ultimately, the ongoing exploration of gamification holds promise for creating more engaging, effective, and equitable educational opportunities for learners worldwide.

Recommendations

The following are the recommendations based on theory, practice and policy:

Theory

Future studies should delve deeper into the psychological mechanisms underlying the effectiveness of gamification in motivating learners and improving learning outcomes. Investigating factors such as intrinsic motivation, self-determination theory, and cognitive engagement can enrich our theoretical understanding of how gamification influences learning processes. Researchers should explore how gamification aligns with and enhances existing learning theories such as constructivism, social cognitive theory, and situated learning. By integrating gamification principles with established theoretical frameworks, educators can design more robust and theoretically grounded gamified learning experiences.

Practice

Educators should focus on designing gamified learning experiences that are not only engaging but also meaningful and relevant to learners' educational goals. Incorporating elements such as

narrative, challenge, and feedback can enhance learner motivation and promote deep learning. Gamified learning experiences should be personalized to meet the diverse needs and preferences of learners. Educators should employ adaptive gamification techniques that tailor challenges, rewards, and feedback to individual learners' abilities and interests, thereby promoting intrinsic motivation and self-directed learning.

Policy

Policymakers should incentivize the adoption of gamification in online education through funding initiatives, professional development opportunities, and recognition programs. By providing support and resources to educators, policymakers can encourage the widespread integration of gamification into online learning environments. Policymakers should develop ethical guidelines and standards for the use of gamification in online education, particularly concerning issues such as data privacy, academic integrity, and inclusivity. Establishing clear guidelines can help mitigate potential risks and ensure that gamified learning experiences adhere to ethical principles and promote equitable access for all learners.

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