Developing an Interactive Games of Information Management Education for Online Distance Learning

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ABSTRACT

Gamification has progressively gained popularity in higher education as a valuable complement to the breadth of available learning tools for academicians and students. Plausibly, this is due to the nature of the digital native generation, who are more likely to be interested in educational technologies. The purpose of the study is to develop an Interactive Games of Information Management Education that fosters information literacy and cataloguing skills for information management students. It is a self-learning game for academicians and students that aims to improve educational quality in entertaining ways. This study used a few website applications to design the course content with game elements that innovate the teaching and learning method. An online survey was conducted to examine students' perception of online interactive game-based learning. A total of 46 students of a public higher learning institution participated in the survey. Based on the frequency analysis, it was found that students' self-efficacy in information literacy and cataloguing skills increased due to the game's gamified learning approach. In general, most of the students surveyed have a favourable opinion after experiencing the Interactive Games of Information Management Education for their learning activities. Among others, they agreed that the Interactive Games of Information Management Education provide an effective and enjoyable online learning environment. Additionally, students believed that gamification would benefit them in gaining a better knowledge of the course materials.

1. INTRODUCTION

The COVID-19 epidemic has impacted every industry in the world, including the education sector. The pandemic has caused a significant shift in teaching and learning methods used to present syllabus contents. Before the pandemic, it was common to have face-to-face communication between educators and students, but this is no longer the case. The affected educators and learners are forced to embrace online techniques to continue learning activities. Zainuddin et al. (2021) mentioned that shifting traditional classroom education into an online educational environment with insufficient planning is challenging and ineffective. The advent of social media and online gaming and the ubiquitous usage of intelligent gadgets have made it even harder to keep students motivated to learn (Rabah, 2018). It is more difficult to stimulate students' motivation and interest to engage in online courses and urge them to learn outside the traditional classroom setting (Baber, 2020). Educators are concerned about how to sustain students' interest and involvement (Rahman et al., 2018). Thus, educators are constantly finding ways to develop and implement learning activities that are based on a participatory, pleasurable, and fun manner. The improvement of teaching delivery aims to assist students in remembering more facts by providing entertaining and engaging learning experiences.

Gamification is one of the strategies that can promote teaching and learning effectiveness in a digital environment. Loos and Crosby (2017) expressed that gamification approaches based on active learning offer a solution to the passive classroom and a motivator of student involvement. Active learning encourages student flexibility and participation in the learning experience, and students can get the information on their own through experiential engagement in the learning process (Murillo-Zamorano et al., 2021). Sobocinski (2017) asserted that people's behavior might be improved by increasing motivation and engagement through immersive experiences. Tisza (2021) stated that fun is a crucial learning component, particularly among gamification experts. They can make learning more exciting, fun, and ultimately more effective (Barber, 2018; Barber & Smutzer, 2017). According to Siemon and Eckardt (2017), models that incorporate game dynamics increase motivation and enjoyment but do not always increase learning efficiency. Meanwhile, Llorens-Largo et al. (2016) discovered that the most significant element of a gamified system is the element of enjoyment. Merriam Webster (2022) indicated that fun is what provides amusement or entertainment. It generates interest, a feeling that accompanies or causes special attention to something or someone and induces or persuades to participate or engage.

Based on the above discussion, this paper aims to develop an Interactive Games of Information Management Education (i-GIME) framework to enhance students' learning concentration, motivation, and interest. The main idea behind this framework is that educators should incorporate entertaining gamification technologies in delivering education to students. Gamification in learning improves engagement in educational environments by introducing game elements into the learning context (Dichev & Dicheva, 2017). Integrating education and entertainment is essential to foster a sense of enthusiasm and enjoyment about learning in students. It is believed that learning delivery assisted by gamification could boost students' confidence, motivation and engagement in the class. The development of the i-GIME framework is relevant as most countries are gradually moving from traditional learning methods to more interactive, engaging, and immersive learning approaches. This paper is divided into several sections.

2. LITERATURE REVIEW

2.1 Gamification and Education

Gamification as an educational and commercial strategy is rising in all fields (Deif, 2017). It has received much attention in educational settings (Koivisto & Hamari, 2017). According to Merriam-Webster (2021), gamification is defined as the "process of adding games or game-like elements to something (such as a task) to encourage participation." gamification relies on people using the gamified system in learning to be shown as valuable and practical (Ofosu-Ampong, 2020). Gamification is a societal phenomenon that has emerged because of a generation of digitally savvy people (Alsawaier, 2018). It has emerged as one of the most significant technology advancements in the field of human interaction (Majuri et al., 2018). Ahmed and Sutton (2017) highlighted that gamification is the practice of incorporating game theory and design, game components, game aesthetics, and game mechanics into a learning experience. It involves game features not to transform learning into a computer game, but to enhance learning, engagement and encourage positive behaviour (Alsawaier, 2018).

In China, gamification has been widely carried out in primary and secondary schools and has also been practiced in universities, especially in computer teaching (Ying, 2021). Ofosu-Ampong (2020) indicated that the widespread embrace of gamification and game features in education has a wide range of implications on student outcomes and engagement. Many educators believe that gamification will enhance students' enthusiasm to study and make academics more effective and meaningful (Rabah, 2018). Pastushenko et al. (2018) demonstrate that gamification does assist in increasing students' motivation. The basic idea of gamification is to study, use and replicate the same motivation and flow of the users in other fields. Mirzoyeva and Kabdrgalinova (2021) stated that the power of gamification could increase student focus and perseverance in learning. By playing games and allowing failures, namely repeated failures, students can learn from them. At the same time, cognitive reward includes the development of problem-solving and critical thinking skills. Students must complete tasks successfully to win and pass to the next level. The rewards provided at the end of each game increase motivation.

Santana et al. (2016) mentioned that gamification makes use of the elements present in electronic games, such as rewards, feedback, rankings, and exchanges. Their application in education can motivate students to accomplish specific tasks or competitions to achieve objectives. Gamification has the likelihood of adjusting behaviors, developing commitment and generating learning. In a similar vein, Liu et al. (2017) stated that gamification uses game design aspects to improve educational results, make repetitive processes more entertaining, and make students' assignments and learning more enjoyable Thus, gamification incorporates a fun component that facilitates changing students' attitudes toward learning (Alsawaier, 2018) and boosts students' personalities and productivity (Ofosu-Ampong, 2020). However, for gamification to be effective in education, a concerted effort from educators, administrators, and the information technology department of a higher learning institution is crucial in creating successful gamified courses (Sobocinski, 2017).

Many research highlights the benefits of using gamification in learning. Alabbasi, 2017 stated that students believe that incorporating game elements in education enables them to have a sense of belonging, enjoy, feel less lonely, increase connectivity, lessen boredom, reduce anxiety, reduce stress, and increase positivity in the learning process. Similarly, Plump (2017) asserted that game-based learning tools oriented on online learning amusement, concept support, and good energy could contribute to increasing motivation and meaningfulness. Such

devices can create an inviting atmosphere that encourages active involvement and promotes learning. In another study, Pacheco-Velazquez et al. (2021) showed that the implementation of gamification activities in a problem-based learning classroom can positively impact students' academic achievement and satisfaction, including learning skills.

2.2 Interactive Games of Information Management Education

This study introduces i-GIME to supplement traditional teaching methods in information management courses. It teaches compliance, adaptation, problem-solving, interaction, critical thinking, and creativity rules. Also, it is a productive instructional tool since it enlivens traditional teaching approaches that students find mundane. The i-GIME is built with Google Sites, Wordwall, Liveworksheet, and interactive websites. This application is simple to use and intuitive to navigate. The contents in i-GIME are aligned with a particular course's academic syllabus to achieve learning outcomes. They engage learners' emotions by utilizing a computer monitor filled with vibrant colors and animations to capture and maintain their attention. Students can use a smartphone, tablet, or laptop to play the games available in i-GIME. Apart from games, students can also get information related to library management and information management when accessing i-GIME. It can be used as an alternative and innovative teaching method through digital games and playing games as part of learning for students. As a result, educators' competencies in expanding academic aims to comprehend and support the entire student, not just their subject knowledge and skills but also their social, emotional, and behavioral skills, are being developed. This flexible learning method meets the needs of 21st-century learning, that is, learning without being bound by space and time.

2.3 Developing the Interactive Games of Information Management Education

This i-GIME innovation was designed using Google Sites and is entirely web-based. The interactive information management education games website interface is depicted in Figure 1. The website includes the home menu, courses, tutorials, and external links. Figure 2 illustrates the home menu, which leads to the introduction of i-GIME, a web-based edutainment that delivers comprehensive information. The welcoming information is embedded and related to the information management and syllabus.

Figure 1. Website Interface of i-GIME

Figure 2. Home Menu

As indicated in Figure 3, the courses menu describes the subjects Introduction to Information Skills (course code IMD111) and Introduction to Cataloging (course code IMD223). Introduction to Information Skills is a subject that requires critical thinking skills, such as literacy, citation, and reference skills. Simultaneously, IMD223 is a curriculum that describes library materials according to established criteria. Additionally, each course includes tutorials. Students can play a game to better understand the material in these tutorials, which are game-based. Figure 4 illustrates the multiple games available for IMD111, including Info Hunt, Reshelf It!, Cite it!, and Where is it? According to the subject discussed, these games creatively use the given platform to produce engaging games.
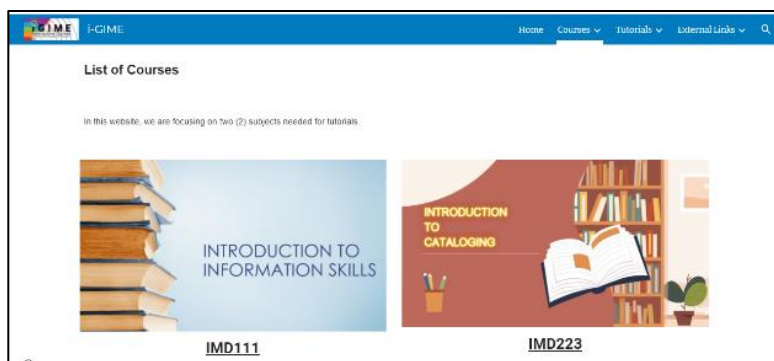

Figure 3. Courses Menu

Figure 4. Course Tutorials