

“Position Paper: Gamification in Education”

Researchers:

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Abstract:

Gamification is a very important topic, especially in light of the field of scientific openness. It refers to the use of game mechanics and game elements in a non-game context. Recently it has taken a significant amount of attention and has been applied in a wide range of fields in order to motivate and engage people in performing certain activities and solving different problems. Our position in this paper is that gamification in education is an approach for encouraging learners' motivation and engagement by incorporating game design principles in the learning environment, which facilitates students' learning.

Key words: Gamification, Motivation, Engagement.

INTRODUCTION:

Nowadays, the advancements in the field of science and technology greatly influence our lifestyles, and cause changes in every aspect of them. These developments also affect the ways of teaching and learning. technological innovations reveal a new generation of education tools designed to help students to learn in a non-traditional way. Today having computers in the classrooms is often not enough to embrace tech-savvy students. so, teaching through games and simulations has a potential to engage today's students who are masters of multi-tasking through information and communication technologies. Computer games are found to be one of the interesting, entertaining virtual environments and as an important strategy to support new approaches as a teaching tool for students (Ding & Orey,2018).

We are living in an era in which learners grew up as digital natives and have different learning styles, and new attitude to the learning process. This requires modern pedagogical paradigms and trends in education (Kiryakova & et al., 2014). Gamification is a trend aiming to fulfill students' requirements, needs, and preferences, keeping them engaged and motivated during their learning process and maintain an active learning (Menezes & De Bortolli, 2016).

Gamification

Gamification in education refers to the insertion of game elements and gameful experiences in the design of learning processes. It supports learning in a variety of contexts and subject areas, also to address related attitudes, activities and behaviors such as participatory approaches, collaboration, self-guided study, completion of assignments, making assessments easier and more effective, integration of exploratory approaches to learning, and strengthening student creativity and retention (Gressick & Langston, 2017).

When the concept of gamification is applied to education, Learners are hooked by fun and then rewarded with knowledge and skills. Therefore the opportunities for experiential, self-paced and lifelong learning expand exponentially (Ding & Orey, 2018). also applying gamification techniques in a curriculum can help to provide a more inclusive activity through its effect on students' sense of competition, inter-action, and motivation (Davis & et al., 2018). In general, the application of gamification in the educational context can help to increase student's motivation and engagement in learning when satisfy innate psychological needs of human beings.: autonomy, relatedness, and competence (Lo & Hew, 2020). Ding and Orey (2018) see that the majority of the existing research reported that the gamification approach can have positive influence on student learning, such as encouraging participation, promoting motivation, and bolstering interests in learning. Alsawaier (2018). Review the literature of studies on the effect of gamification on student's motivation, and engagement, depending on his review, the summary was as shown, in table (1):

Table 1: Summary literature review of studies on the effect of gamification on student's motivation, and engagement

Researcher/s	Description of the studies	Result
Hamari, Koivisto & Sarsa, (2014)	Review of 24 Empirical studies	Positive experiences from gamification on engagement and enjoyment were reported in all of the studies
Hanus and Fox's (2015)	Quantitative study examined a gamified course as compared to a non-gamified one	Students in the gamified settings exhibited less motivation and lower scores
Seaborn and Fels (2015)	Reviewed 32 studies on the utilization of digital gamification elements pedagogically	study yielded positive results 20 connecting gamification to increased levels of motivation and engagement. Remaining 12 studies yielded negative results, no correlation between students' engagement and introduction of game elements
(Kingsley & Grabner, 2015; Leaning, 2015; Papastergiou, 2009; Seaborn & Fels, 2015; Koivisto & Hamari, 2014)	Empirical studies on the utilization of gamification elements.	Agree on the positive effect on students' engagement, motivation, and overall performance.
(Leaning, 2015; Berkling & Thomas, 2013)	Empirical studies focused on limited features of gamification.	Produced negative or mixed results, focused on limited features of gamification, or forced the students to work with the game options available and failed to give them choice
(Attali & Arieli, 2015)	How students felt toward the introduction of the game elements to the learning environment.	Positive results showing higher likeability ratings when gamification features are introduced

Gamification and Student Motivation

In education, motivation is considered a key determinant of learning, explain the attention and effort students dedicate to particular learning activities (Gressick & Langston, 2017). A significant problem that many schools and educators are facing today, is that lacking the motivation and interest to learn. So that part of the role of the teacher is managing learner motivation (Rojo & et al., 2019). Gamification is a tool to increase motivation by using the elements of games in student education (Kiryakova & et al., 2014). Several studies found positive links between gamification and student learning motivation. Alsawaier (2018) mentioned in his study that: Seaborn and Fels reviewed 32 studies on the utilization of digital gamification elements pedagogically, 20 studies yielded positive results connecting gamification to increased levels of motivation. Mostly negative results from gamifying an education may appear if instructor do not take a care when applying certain gamification mechanics to educational settings course. On the other hand, some studies found negative effect of gamification and student learning motivation. For example, Hanus and Fox (2015) study, which involved two courses, one course received a gamified curriculum, featuring a leaderboard and badges, whereas the other course received the same curriculum without the game elements. The result show that students in the gamified course were less motivation than those in the non-gamified one.

Combining the theory of self-determination theory (SDT) with the results of studies on the effects of gamification, the findings shows that gamification is capable of both facilitating and undermining motivation. According to SDT, gamification should be capable of increasing motivation through supporting the basic psychological needs for autonomy and competence. achieving this, is dependent on the motivational affordances of the gamified system as a whole in relation to the users of the system and the context that is gamified (Alsawaier, 2018).

Gamification and Student Engagement

The gamification approach has a positively effect on student engagement, it is foster their engagement, bring them enjoy while studying and generate levels of involvement equal to what games can usually produce (Ding & Orey, 2018). In other words, it facilitates learning, encourage engagement, improve learner participation and lesson interactivity, and to stimulate learners to expand their knowledge. Gressick & Langston (2017) mentioned that three researchers (Hamari and others) reviewed 24 empirical studies on gamification, and stated that most of the studies yielded positive results of the relationship between gamification and learners' engagement.

The properly implementing of gamification satisfy intrinsic engagement and represents a powerful tool for teachers at all levels in the educational system. The best engagement appears when a student is challenged at levels aligned with his skills. Primary school students were engaged when they were challenged at a suitable difficulty level, but their performance dropped when the level of challenge became too high and they grew frustrated (Alsawaier ,2018).

In gamification, student was not only learning what their schools offer but also trying to understand and internalizing the material towards their life. Students fail and not feel rejected, so they are willing to try more and more (Cahyani, 2016), and prepare them for future learning (Gressick & Langston, 2017). Smiderle & others (2020) found that gamification affects students differently depending on their personality traits. More specifically, the distinct components of gamification affect students' engagement depending on their personality traits (extroversion, openness, agreeableness, neuroticism, and conscientiousness) in the context of programming learning. Introverted students who used the gamified version were more engaged than extroverted students for the same version, and this change in engagement is verified by the number of logins, badges, points, and also the number of visualizations of the gamification elements.

Rahman and others (2018) see that engagement as an important attribute to influence students' achievement, students' readiness, enthusiasm for learning, and the way the input is introduced to them are some of the factors that influence their ability to learn. They found that gamification are able to enhance student engagement in a classroom, if the technology selected is easy to use and able to attract the students to increase their engagement in the classroom.

DISCUSSION AND CONCLUSION

One of challenges of the educational system nowadays that is student motivation and engagement. Gamification has the potential to improve scientific software usability and incorporates several game elements which is effect learning activity heavily leans on the manners of applying each element. gamification is controversial. Some think it is just a synonym for a hype in the e-learning community, others see it has a negative influence on learners and a third group believes it is a treatment for education. over past several years gamification has been proposed as a potential approach that can motivate and engage students in learning (Cahyani,2016). The majority of the existing research reported that the gamification approach can have positive influence on student learning, such as encouraging participation, promoting motivation and bolstering interests in learning, so the overall effect therefore is improved quality of learning. Some studies have found a negative effect of gamification in education, but it attributed the reason for these results to a misapplication of gamification in education, and failure to take into account students' personalities, tendencies, and characteristics when using gamification in education.

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