



THE LACK OF GAMIFICATION METHODS IN E-LEARNING

Madina Alimanova,

Department of Engineering and Natural Sciences, Suleyman Demirel University Kaskelen,

Kazakhstan

madina.alimanova@sdu.edu.kz

Bekassyl Karazhan

Department of Engineering and Natural Sciences, Suleyman Demirel University Kaskelen,

Kazakhstan

201107065@stu.sdu.edu.kz

Abstract

E-learning is rapidly growing as an essential part of our life due to the pandemic. The lack of involvement and motivation within students during lessons is the main weakness of distance learning. Due to engagement issues at online conversations, students often do not attend classes or tend to mute lessons on the hardware level.

Ignoring these problems can cause a decline in the level of education and the emergence of untrained personnel. This article discusses problems of E-Learning such as the lack of motivation and involvement, then examines the need for research on gamification in education that would be one of the solutions to these problems. Also, it considers the method of using virtual reality in education as a possible solution. The article aims to analyze these issues and appropriate studies on this subject to identify the lack of proper research on gamification in education.

The majority of the proposed researches were conducted at the pre-pandemic time. Therefore, this field requires researches to identify new methods of the learning process that would be applicable in the modern world of online education.

Keywords – Gamification, e-learning, VR.

Introduction

The closure of schools and educational institutions under quarantine has led to a sharp need for distance learning technologies. Despite the development of information technology in our time, students and teachers around the world have problems with E-learning. While the hardware solution is quite obvious which requires the stability of servers and the availability of equipment, a clear solution in terms of software and learning strategy is not available.

Nowadays, distance-learning technologies have a major weakness with the motivation and involvement of students in the education process. Multiple recent kinds of research mention that low engagement level within students is one of the main problems of E-learning (Moubayed, Injadat, Shami & Lutfiyya, 2020). Students attend lectures without full engagement. All responsibility for ensuring student involvement rests with the instructors. Many of them are obliged to make turning cameras on mandatory part of online lessons and force students to put their private lives on display. The teachers say that it helps to check student's engagement levels and hold them accountable. Also, verbal feedback from listeners makes teachers feel more comfortable than when they have to talk to a collection of black boxes (Will, 2020).

There is no applicable technical way to measure the subject of attention of students at that moment, unlike the usual traditional face-to-face lessons. Hypothetically, virtual reality technologies would be useful to re-create the atmosphere of offline classes into E-learning. This article considers VR with gamification methods as the possible solutions to the engagement problem.

The term gamification is defined as “the use of game design elements in non-game contexts” (Deterding, Dixon, Khaled, and Nacke, 2011). It uses game mechanics to engage people in a complex area, motivating them with achievements and interactions with game elements to solve

problems. The generation that was born in the embryo of the gaming industry and which grew up actively consuming media content is already part of our society. The number of people who play videogames is increasing and it was amplified during the pandemic (Westcott, Arbanas, Locker, Moran, Wilson, 2021). Thus, gamification methods would be in use and integrate into the majority of fields.

The growth of human and computer interaction has led to innovative educational strategies in education. Gamification is a widely discussed theme in the field of education. The recent article that made a review on the state of research on gamification in education concluded the growth of interest in the field in the area for at least seven years (Swacha, 2021).

This article aims to present a review of the scientific literature on gamification and virtual reality in the education field to identify the necessity of future researches.

Materials and Methods

This is a study of the scientific literature in the field of gamification in education. This research style contributes to the expansion of existing knowledge by identifying gaps and patterns in scientific output based on findings concerning the limitations of previous studies. It is critical to define the criteria of considering studies, interpretation of the findings, and finally the presentation of the review itself in order to obtain proper results. The process of selecting research papers for study, which includes setting device parameters to enable critical reading of the chosen content, is one of the most important aspects of a review.

In the context of research questions of the study several stages of the survey procedure have been defined:

- Reviewing recent relevant materials about education at post-pandemic period, E-learning and its issues in order to define statement of the problem.

- Searching and analyzing articles in the field of gamification itself, to have, learn, and outline basic ideas about the subject and give definitions.
- Selecting and studying articles and papers on gamification and virtual reality in education. To examine provided researches to identify relevant theories, methods, and gaps in the existing research.

While reviewing the materials and analyzing the data, preference was given to those works that were carried out after COVID-19, that is, since 2020. Generally, the recent news and articles were searched by search engines, while scientific papers were gathered by Google or Google Scholar. Google trends will be used to describe the dynamics of interest in the selected theme.

Results and Discussion

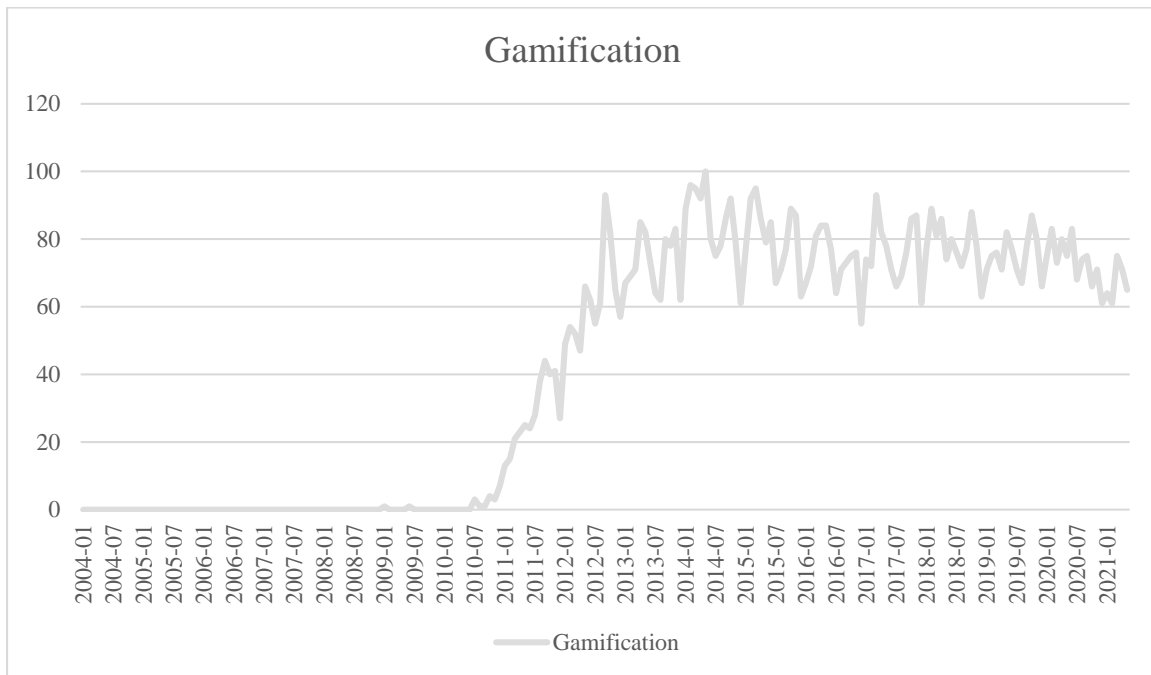
The search request “student engagement e-learning” on Google Scholar showed 17900 results only since 2020. The selected recent materials on education support the hypothesizes about the current situation in the field of E-learning. Overall studies conclude that there is a lack of engagement in E-learning. However, there are limitations with methodology cause it is not possible to accurately calculate the level of student involvement in a large sample. The researchers from Western University provided valid research “Student Engagement Level in e-Learning Environment: Clustering Using K-means”. However, this study only looked at the content of forum posts to determine commitment, ignoring other potential indicators such as how much they connect with the material and how much effort they put in. Anyway, they allow that the lack of engagement and motivation is one of the major problems of E-learning (Moubayed, Injadat, Shami & Lutfiyya, 2020). The articles and interviews on news websites note difficulties in students’ engagement. The instructors make turning on cameras a mandatory part of the online lessons or at least give some extra points. This entails a violation of students' privacy (Will, 2020). Hence, there is a necessity

in identifying new teaching methods that would benefit both parties and would not undermine anyone's rights.

The term of gamification mentioned for the first time in 2011 by Sebastian Deterding, Dan Dixon, Rilla Khaled, and Lennart Nacke. It was defined as “the use of game design elements in non-game contexts” (Deterding, Dixon, Khaled, and Nacke, 2011). They set the beginning of a whole direction in science that will be studied in different surveys and in particular in education. The term “Gamification” started searched on Google approximately in 2010 when the researchers were writing their paper (Figure 1). It confirms that this field is relatively new and so needs further researches.

Figure 1.

Interest over time to the term “Gamification” on Google Trends

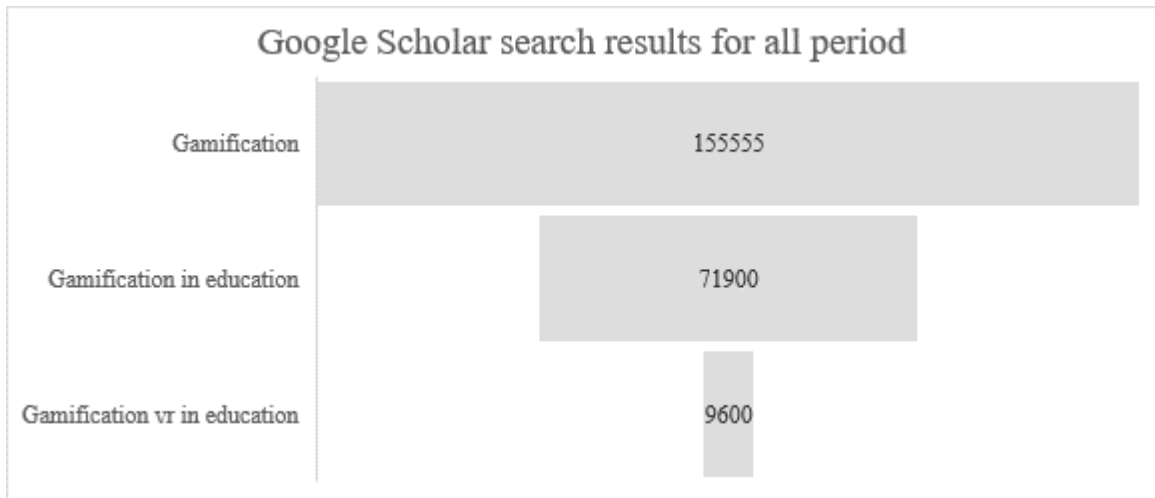


In 2021 we are familiar with and regularly use gamified applications or utilities with gamification methods. For instance: Hackerank, Reddit, StackOverflow, or Duolingo. The field of education is one of the most popular spheres for using gamification methods. The findings on

Google Scholar confirm it and illustrate the narrowing of the sample static when taking into account the criteria mentioned in the methodology section. (Figure 2)

Figure 2.

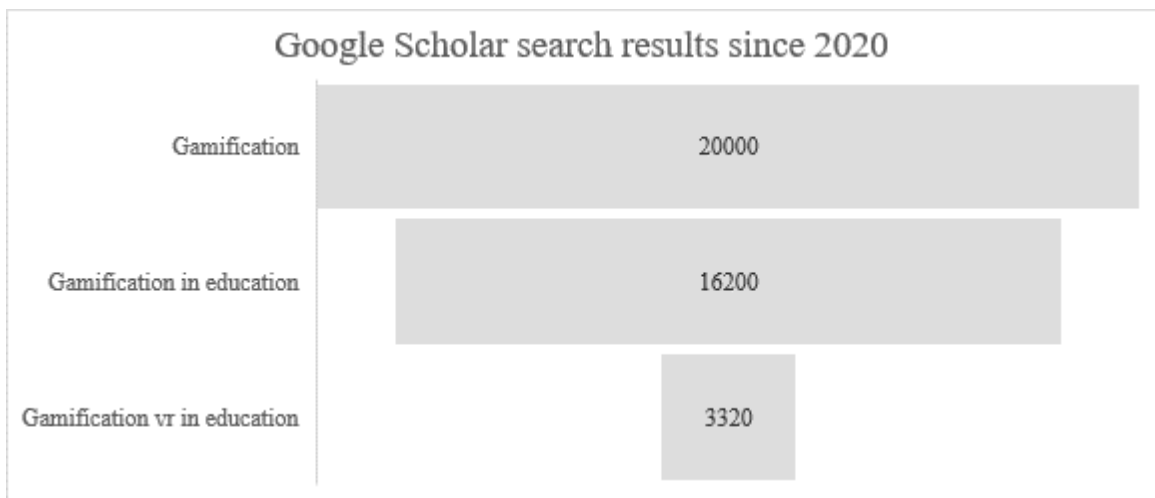
The numbers of found works on Google Scholar



Therefore, it is possible to take into account studies written after COVID-19, because the world, including human priorities and research subjects, changed significantly (Figure 3).

Figure 3.

The numbers of found works that were published since 2020 on Google Scholar



By taking into account all found materials it is possible to answer all research questions of the article. The field of education was particularly affected after COVID-19 and it became clear that E-learning needs development. Previously provided surveys of teachers confirm difficulties related to the lack of verbal feedback and having a dialogue between students and instructors. Also, recent studies show that people who play or at least familiar with videogames eventually increase (Westcott, Arbanas, Locker, Moran, Wilson, 2021). Hence, in the longer term stakeholders of education would be open to integrating game mechanics of motivation and engagement in the process of learning even in higher education.

The term of gamification that first mentioned in a scientific field only 10 years ago, but continues to grow and already became one of the frequently studied topics. Recent studies identified the main characteristics of gamification field by gathering and then analyzing the corresponding works using a bibliometric approach. Significant work has been undertaken with the purpose to identify the state of research on gamification in education that qualitatively complements this article. The results of the findings confirm that gamification in the field of education is an important research area for providing new studies (Swacha 2021). Within studies on gamification, there are also research papers of provided experiments.

The researchers investigated the impact of gamification on productivity at work and came to conclusions showing its usefulness in performance and satisfaction (Gerdenitscha, et al., 2020). Lidia Aguiar-Castillo, Lidia Hernández-López, Petra De Saá-Pérez, Rafael Pérez-Jiménez provided their HGameApp in their research where they suggest gamification as a motivation strategy for higher education students in face-to-face learning. Their research concluded that the educational community could do a great deal to improve the intention of students by using gamification strategies (Aguiar-Castillo, Hernández-López, De Saá-Pérez, Pérez-Jiménez 2020).

According to the successful experiments with the segments of the gamified application, it becomes clear that there is a need to perform analogical research with the participation of own developments that would have to integrate VR.

Virtual Reality technologies find applications in different fields of human lives. VR in education is one of the most discussing research areas. The findings of the current article confirm the availability of studies on VR and gamification in education. Recent marketing research provided with the purpose to review studies on the use of VR and gamification to engage students in higher education and to identify the research topics, the research gaps, and to prepare a future research agenda concludes the significance of corresponding studies in this field (Loureiro, Bilro, and Angelino. 2020). Some experiments conclude that students did not perceive the VR software to be of sufficient value for them to invest time into using it during the module (McFaul, FitzGerald, 2020). This type of result might be one of the outcomes of further possible research involving VR application in education. However, the findings of the article demonstrate that researches on gamification and VR in education are demanded.

Conclusion

In this article, the state of research on gamification and virtual reality in the field of education was considered. The results of the article confirm the presence of problems with motivation and engagement in the current type of education, E-learning. Also, provided statistics confirm the promise of the effectiveness of gamification methods in future education. In conclusion, the findings demonstrate that there is a significance in prospective research on gamification and virtual reality in the field of education. The outcomes of this study may help to conduct further researches with identifying the state of research.

There may be some possible limitations in this study. The insufficient sample size for statistical measurement might take place. Review on state research in the field has to have a specific approach to

the studies. Also, the article does not consider materials from Kazakhstan and the authors did not conduct their surveys or experiments, but only rely only on world sources.

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