International Journal of Social Science And Human Research

ISSN (print): 2644-0679, ISSN (online): 2644-0695

Volume 06 Issue 09 September 2023

DOI: 10.47191/ijsshr/v6-i9-50, Impact factor- 6.686

Page No: 5726-5732

Using Online Games in Teaching: A Bibliometric Analysis

Chuyen T. H. Nguyen[1], Ho Thuy Ngan[2], Pham Thi Thanh Hoan[3]

[1,2]Faculty of Primary Education, University of Education, Thai Nguyen University, Thai Nguyen, Vietnam

[3]Nguyen Du Primary School, Hoan Kiem District, Hanoi, Vietnam

ABSTRACT: This paper aims to study an overview of the using online games in teaching based on the Scopus data source from January 2016 to July 2023. The PRISMA model is used to guide the selection of articles. After selection and consideration, 19 scientific articles were included for analysis. The author analyzes information such as number of research articles, country, author, citations, keywords. The results showed that the number of research articles on the use of online games in teaching is increasing, in which the article "*Using online game-based platforms to improve student performance and engagement in histology teaching*" of the authors Felszeghy S. et al. (2019) most influential with a citation index of 81. *Student, learning, online, games* are keywords that often appear in the articles analyzed. Therefore, through systematic review research to help educational researchers, teachers identify important information about the use of online games in teaching so that they can guide future studies.

KEYWORDS: online games, teaching, bibliometric, student, learning

I. INTRODUCTION

Online learning games are defined as games designed on a computer or through a mobile device using internet data access (Nawawi & Kusnoto, 2019). In the context of digital transformation of teaching, using online games is important because it can help students solve problems and interact with each other in the learning process (Chapman & Rich, 2018). Besides, it has the ability to improve the participation and proactive learning of students (Asniza et al., 2021). Barab et al.'s research suggests that online learning games can facilitate experiential learning through the use of game elements, game thinking, and game mechanics that make learning more fun and rewarding than traditional learning. In addition, online learning games can motivate and engage learners in the classroom (Ashraf et al., 2014; Barab et al., 2009); With a point and reward system, instant feedback (Darejeh & Salim, 2016), levels and leaderboards (Mohamad et al., 2020) as well as challenges and feelings of involvement (Abrams & Walsh, 2014) students will have determination to win challenges, complete game levels (Chadyiwa & Mgutshini, 2015). Ashraf et al. advocate that online games create fun learning environments, especially for elementary school age (Ashraf et al., 2014). When learners become active learners, they can become more effective and motivated in learning (Shaaruddin & Mohamad, 2017). Moreover, thanks to the flexibility of online games, learners can learn at their own pace through choosing difficulty levels as well as different game styles (Chiappe et al., 2013). Zirawaga also argues that online games "teach" learners other skills such as sportsmanship, creativity and collaboration (Zirawaga et al., 2017).

Besides certain roles, online games exist some challenges and difficulties. One of the biggest challenges in implementing online gaming is learners' readiness to embrace technology into learning. The use of online games may not be suitable for all learners: some students may be interested in participating in online learning games, while others feel that online games make their learning experience more difficult (Bovermann et al., 2018). The second is teacher readiness, Marklund (2016) have researched and found that teachers lack willingness in using online games in learning (Marklund & Taylor, 2016). The findings highlight that online games are labor-intensive and resource-intensive to use, and that there are few established guides to guide teachers through the process of integrating online gaming in the teaching process. Third, the view of education administrators is that online games only have a hands-on role, reinforcing the traditional classroom and not the main tool for teaching (Mohamad et al., 2020).

To solve the above problem, many scientists have stated and presented the potentials, opportunities, difficulties and challenges for the integration of using online games in teaching. This is shown through a series of research articles overview of the use of online games in teaching such as: author Hasram et al. (2020) with an overview study of the factors, concerns, and challenges of online games for learners of English as a second language (Hasram et al., 2020); assess the impact of online games on students' English vocabulary learning (Kayaaltı, 2018); Learn the role of online games in the second language learning process (Jabbari & Eslami, 2019); Study the impact of online game use on children's learning. However, most general research articles on the use of online games in learning focus only on research and classification of content. Meanwhile, basic information, such as active authors in the field, influential articles,... has not been thoroughly analyzed.

Therefore, this article aims to solve this problem by analyzing a bibliography of scientific articles on the use of online games in teaching: i) How does the number of research articles in the Scopus database for the use of online games in teaching change?; ii) Which authors and articles are most famous in the field of using online games in teaching?; iii) How are the keywords used in the Scopus database when discussing the use of online games in teaching related? iv) Which countries have studies on the use of online games in teaching?; Which country has the most number of studies?; v) Which keywords appear most often about using online games in teaching from research papers in the Scopus database? vi) What are the issues studied in the papers?
Answering the research questions above will help teachers gain basic perspectives for using online games in teaching. New researchers can find new research directions in the future through gaps in research.

II. RESEARCH METHODOLOGY

The paper uses the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) review method because it has a highly reliable, scientific, transparent, systematic work plan (Moher et al., 2009). Article selection criteria for general study: 1) Articles in the Scopus database; 2) The topic of an article is related to "online gaming" or "online gaming" and "teaching" or "learning"; 3) The article is written in English; 4) Publications published between 2016 and 2023. Figure 1 depicts the flow of information through the different stages of system evaluation using the PRISMA method.

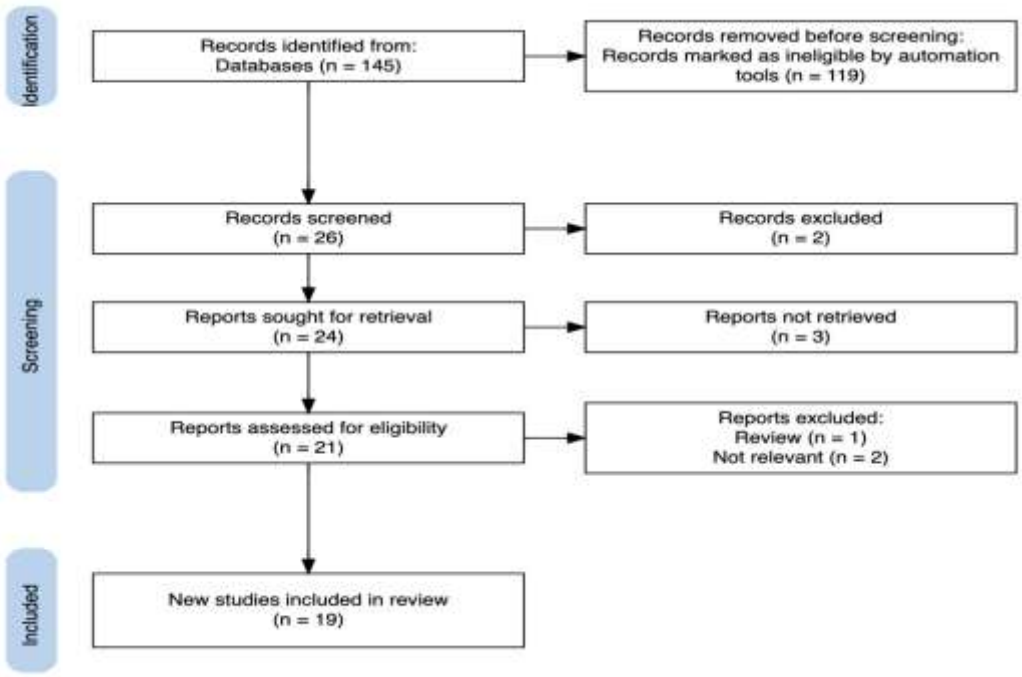

Figure 1. PRISMA compliance overview of data warehouse collection and processing for systematic research

To conduct a comprehensive analysis of search results, we exported all records as a comma-separated file (CSV) for further testing and visualization. To create visual representations of data, we used a widely used computer program called VOSviewer (Van Eck & Waltman, 2010). This tool allows us to create visualizations of various metadata elements such as author, keywords, country, and organization.

III.RESULTS AND DISCUSSION

A. What is the number of research articles in the Scopus database for the use of online learning games in teaching?

Figure 2 shows an overview of the distribution of the number of materials on the use of online games in teaching from 2016 to 2023. The total number of papers analyzed was 19 and the number of scientific papers was unevenly distributed over the years. The general trend, the number of published materials on the use of online games in teaching has gradually increased from 2016 to 2022, peaking in 2021 with 5 materials. This suggests that this topic has been attracting the interest of many researchers and authors in recent years. However, in 2022, the number of documents has declined. The decline in the number of published materials on the use of online games in teaching in 2022 can be explained by the impact of the COVID-19 pandemic. Schools have returned to face-to-face instruction after a period of using a combination of face-to-face and online teaching, so the use of online games has declined. This shows that this topic is still being interested and researched in the near future, and researchers and authors are continuing to exploit and use online games in teaching.

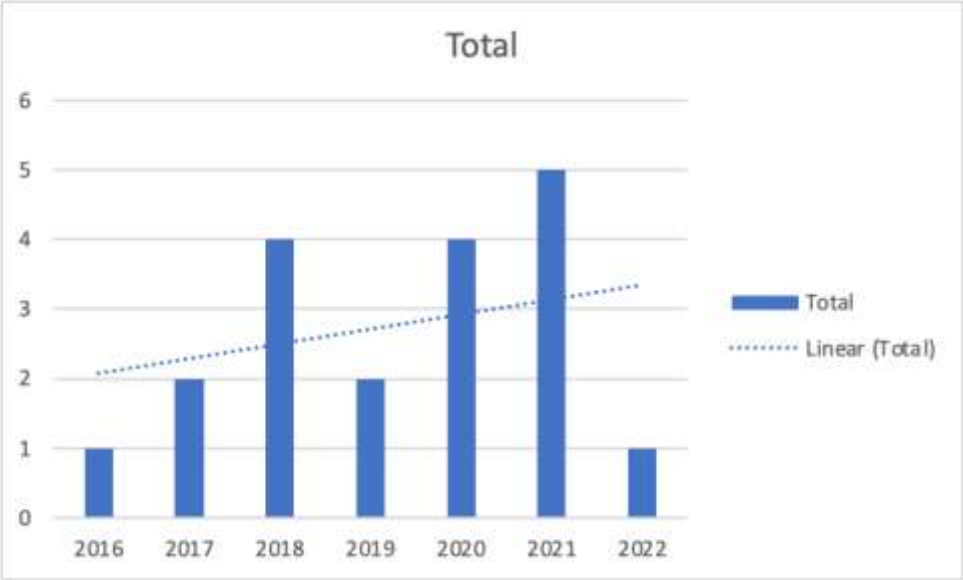

Figure 2. Chart of distribution of articles by year

B. Which authors and articles are most famous in the field of using online games in teaching?

From table 1, we can see that the research paper Using online game-based platforms to improve student performance and engagement in histology teaching published in Magazine BMC Medical Education (Q1, H-index 87) of the author team Felszeghy S. et al. (2019) the most interested and cited by scientists with the number of citations is 81 in the Scopus database. This indicates the position and importance of their work in this area. Other authors such as Bovermann K. et al (2018) với bài báo Online learning readiness and attitudes towards gaming in gamified online learning – a mixed methods case study in the journal International Journal of Educational Technology in Higher Education (Q1, H-index 49) has also contributed a significant number of citations in the field, with a citation count of 51. The remaining authors' articles have a citation count ranging from 9 to 23 citations.

Table 1. Top 5 most cited articles in the database Scopus

Authors	Title	Cited by
Felszeghy S., Pasonen-Seppänen S., Koskela A., Nieminen P., Härkönen K., Paldanius K.M.A., Gabbouj S., Ketola K., Hiltunen M., Lundin M., Haapaniemi T., Sointu E., Bauman E.B., Gilbert G.E., Morton D., Mahonen A.	Using online game-based platforms to improve student performance and engagement in histology teaching	81
Bovermann K., Weidlich J., Bastiaens T.	Online learning readiness and attitudes towards gaming in gamified online learning – a mixed methods case study	51
Cameron K.E., Bizo L.A.	Use of the game-based learning platform KAHOOT! to facilitate learner engagement in animal science student	23
Ouariachi T., Dolores Olvera-Lobo Ma., Gutiérrez-Pérez J.	Evaluation of online games for teaching and learning on climate change [Evaluación de juegos online para la enseñanza y aprendizaje del cambio climático]	22
Ibrahim R., Rahim N.A., Ten D.H., Yusoff R.C.M., Maarop N., Yaacob S.	Student's opinions on online educational games for learning programming introductory	9

C. How are the keywords used in the Scopus database when discussing the use of online games in teaching related?

Figure 3 shows a visualized map of research trends using Vosviewer software on the use of online learning games from 2016 to 2023. The mapping results show 10 focus clusters for the research topics: The first cluster (with 9 factors): Dynamic classes, education, engagement, enjoyment, kahoot!, learning curve, online lecture, online-learning tool, tertiary; The second cluster (with 7 factors): Course completion, educational innovation, educational social network, higher education, online course, online learning, social network analysis; The third cluster (with 7 factors): Competition, efl pedagogy, gamification, gamified learning, learners' perspectives, online collaboration, team-based gamification; The fourth cluster (with 6 factors): Competition, efl pedagogy, gamification, gamified learning, learners' perspectives, online collaboration, team-based gamification; The fifth cluster

(with 6 factors): e-learning, game services, interoperability, learning management system, perceived playfulness, technostress; 6th cluster (with 5 factors): choice intention, learning, manipulated subjective, online games, theory of planned behavior; 7th cluster (with 4 factors): Academic confinement, game rewards, innovative education, motivation; 8th cluster (with 4 factors): Achievement, flipped learning, interaction data, participation; 9th cluster (with 4 factors): Behavioral problems, classdojo, classroom management, secondary education, and the 10th cluster (with 4 factors): Blended learning, emotion, interest, online participation

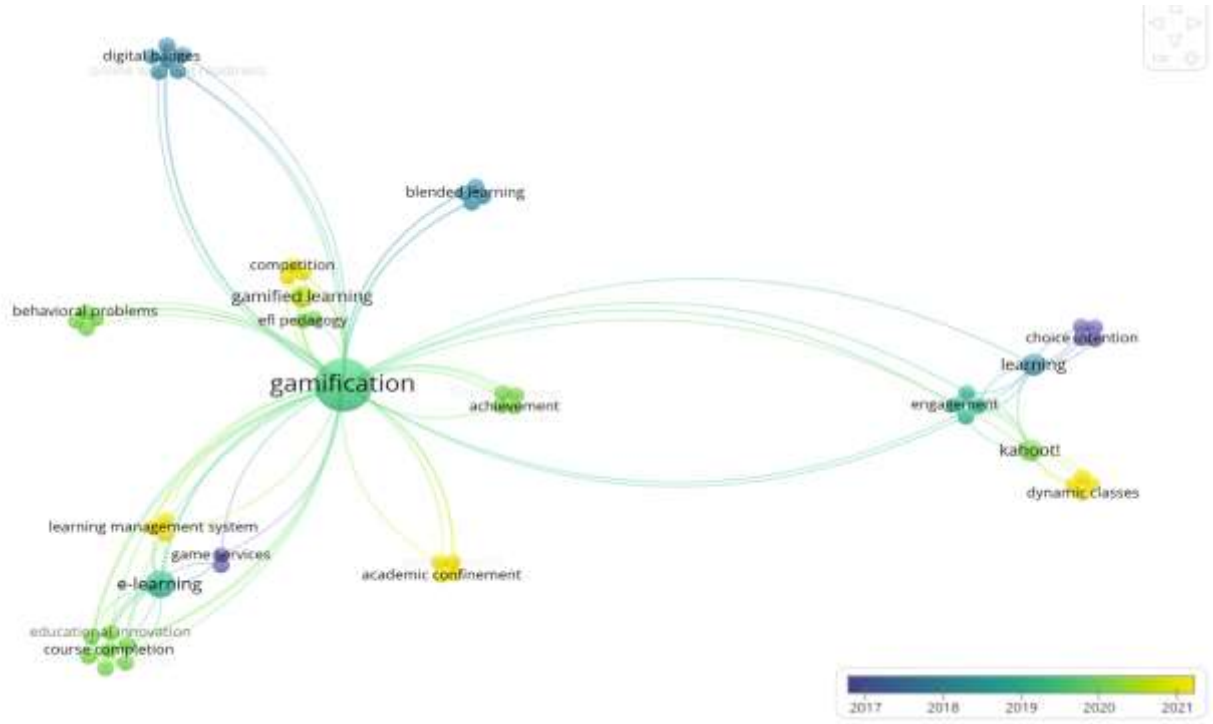

Figure 3. Maps visualize the same keywords that appear in studies.

D. Which countries have research on the use of artificial intelligence in teaching?

According to the research results, we can see that the United States is the country that contributes the most in the number of published materials on the use of online games in teaching, with 4 materials analyzed; followed by Spain, Portugal, Indonesia, and Turkey with 2 documents. The remaining countries each have 1 scientific paper on this issue. These results can provide useful information for researchers, teachers and professionals interested in using online games in teaching.

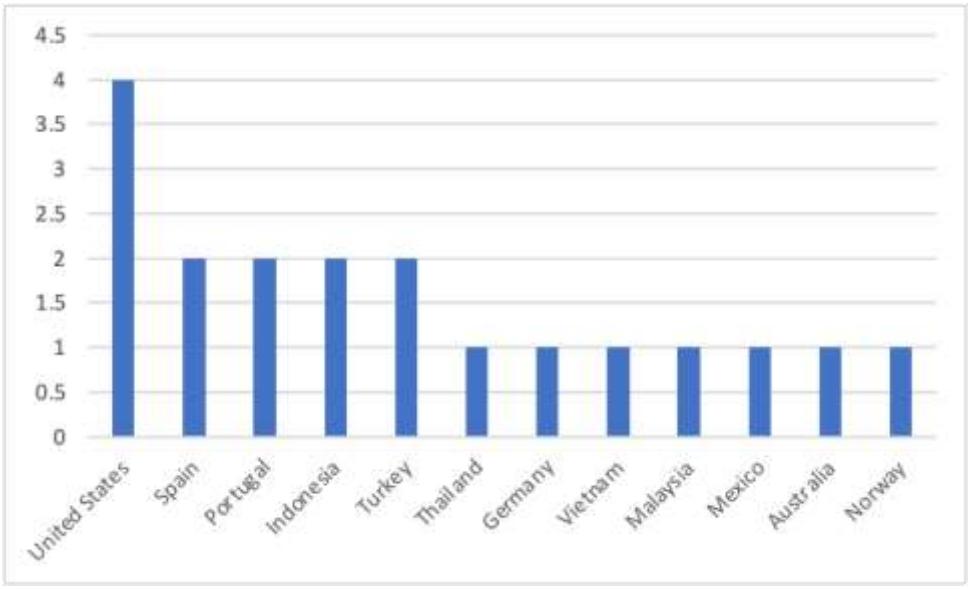

Figure 4. Distribution chart of countries participating in the study on the use of online games in teaching

E. Which keywords appear most often in research on the use of artificial intelligence in teaching of Scopus data warehouse?

Figure 5 depicts the keywords that appear from most to least through the size of the keyword in the image. The above research results show that keywords extracted from articles related to the use of online games in teaching focus on aspects such as learning, students, games, online and education. The keyword "student" has the highest frequency with 65 times. This shows that researchers emphasize the central role of learners in the teaching process. Using online games has a role to play in motivating students to participate in active learning activities. The keyword "learning" appeared second with 64 times, because using online games affects students' learning exploration. The keyword "online" has the next largest frequency with 49 times. In the context of the 4.0 revolution, digital transformation in teaching and learning activities has been strongly implemented, educational institutions have combined face-to-face teaching with online teaching, so online teaching has become increasingly popular. The keyword "gamification" appeared 42 times, indicating that interest in using games in learning tends to increase and is increasingly applied in teaching.

Figure 5. Word cloud related to online learning games extracted from the summaries of research articles.

F. What are the main studied issues in the articles?

Table 2. Basic research issues of articles on the use of online games in teaching

Research problems	Authors
Using Kahoot to create online learning games increases student engagement, motivation, interest in learning, and learning outcomes	(Asniza et al., 2021; Jones et al., 2019; Katemba et al., 2022; Pede, 2017) (Felszeghy et al., 2019)
Use online games to evaluate the process	(Hooshyar et al., 2016)
Experiments on the use of online learning games in teaching: the acquisition of knowledge; learning attitude; Game usage and student satisfaction	(Klisch et al., 2012) (Hummel et al., 2015) (Klisch et al., 2012) (Hasram et al., 2021)
Study the role of online learning games in teaching	(Ouariachi et al., 2017) (Belogianni et al., 2019) (McCall, 2016)
Study the impact of online learning games on student performance	(Nawawi & Kusnoto, 2019) (Cheng & Chen, 2008; Kuo, 2007)
Research, design, and use of online games in teaching	(Herkes et al., 2021) (Octaberlina, 2021) (Ubaidullah et al., 2019) (Moreno & Méndez, 2015)

Research on the use of online games in teaching has attracted the interest of many researchers and authors in recent years. Research papers have analyzed the role of online learning games in teaching; Study the impact of online learning games on student learning outcomes and design online games for use in the teaching process. Some authors have also conducted pedagogical experiments to evaluate the effectiveness of the use of online games in teaching, and the results show that online game use affects knowledge acquisition, learning attitudes and student satisfaction levels.

IV. CONCLUSIONS

The study aimed to analyse papers related to the use of online games in teaching published in the Scopus database between 2016 and 2023. Research results show that interest in online games in teaching is growing, with the emergence of many new papers in the field. Article "Using online game-based platforms to improve student performance and engagement in histology teaching" of

the authors Felszeghy S. et al. (2019) published in Magazine BMC Medical Education (Q1, H-index 87) most influential with 81 citations. The study also found that the United States is a country with many researchers on the use of online games in teaching, and keywords such as learner, learning, online, games often appear in articles related to this field. However, the study also has limitations, such as reliance on the Scopus database and open access articles, articles in other data sources that have not been exploited. However, this analysis provides insight into the direction of research on the use of online games in teaching, helps identify topics that have and have not been covered by scholars in the past, and presents future research gaps. From there, this research can help guide the development of new research in this area.

REFERENCES

1) Abrams, S. S., & Walsh, S. (2014). Gamified vocabulary: Online resources and enriched language learning. Journal of Adolescent & Adult Literacy, 58(1), 49-58.
2) Ashraf, H., Motlagh, F. G., & Salami, M. (2014). The Impact of Online Games on Learning English Vocabulary by Iranian (Low-intermediate) EFL Learners. Procedia - Social and Behavioral Sciences, 98, 286-291. https://doi.org/https://doi.org/10.1016/j.sbspro.2014.03.418
3) Asniza, I. N., Zuraidah, M. O. S., Baharuddin, A. R. M., Zuhair, Z. M., & Nooraida, Y. (2021). Online Game-Based Learning Usıng Kahoot! to Enhance Pre-Universıty Students' Active Learning: A Students' Perception in Biology Classroom. Journal of Turkish Science Education, 18(1), 145-160.
4) Barab, S. A., Gresalfi, M., & Arici, A. (2009). Why educators should care about: Games. Educational Leadership, 67(1), 76-80.
5) Belogianni, K., Ooms, A., Ahmed, H., Nikoletou, D., Grant, R., Makris, D., & Moir, H. J. (2019). Rationale and design of an online educational program using game-based learning to improve nutrition and physical activity outcomes among university students in the United Kingdom. Journal of the American College of Nutrition, 38(1), 23-30.
6) Bovermann, K., Weidlich, J., & Bastiaens, T. (2018). Online learning readiness and attitudes towards gaming in gamified online learning – a mixed methods case study. International Journal of Educational Technology in Higher Education, 15(1), 27. https://doi.org/10.1186/s41239-018-0107-0
7) Chadyiwa, M., & Mgutshini, T. (2015). Using mobile handheld devices as tools of learning and teaching for Student EHPS: A blessing or a curse. International Journal of Humanities, Arts and Social Sciences, 1(2), 85-91.
8) Chapman, J. R., & Rich, P. J. (2018). Does educational gamification improve students' motivation? If so, which game elements work best? Journal of Education for Business, 93(7), 315-322. https://doi.org/10.1080/08832323.2018.1490687
9) Cheng, Y.-M., & Chen, P.-F. (2008). Building an online game-based learning system for elementary school. 2008 International Conference on Intelligent Information Hiding and Multimedia Signal Processing,
10) Chiappe, D., Conger, M., Liao, J., Caldwell, J. L., & Vu, K.-P. L. (2013). Improving multi-tasking ability through action videogames. Applied Ergonomics, 44(2), 278-284. https://doi.org/https://doi.org/10.1016/j.apergo.2012.08.002
11) Darejeh, A., & Salim, S. S. (2016). Gamification solutions to enhance software user engagement—a systematic review. International Journal of Human-Computer Interaction, 32(8), 613-642.
12) Felszeghy, S., Pasonen-Seppänen, S., Koskela, A., Nieminen, P., Härkönen, K., Paldanius, K. M., Gabbouj, S., Ketola, K., Hiltunen, M., & Lundin, M. (2019). Using online game-based platforms to improve student performance and engagement in histology teaching. BMC Medical Education, 19, 1-11.
13) Hasram, S., Arif, F. K. M., Nasir, M. K. M., Mohamad, M., Daud, M. Y., Rahman, M. J. A., & Mohammad, W. M. R. W. (2020). Online Games for Primary School Vocabulary Teaching and Learning: A Literature Review. Creative Education, Vol.11No.11, 10, Article 104189. https://doi.org/10.4236/ce.2020.1111170
14) Hasram, S., Nasir, M. K. M., Mohamad, M., Daud, M. Y., Abd Rahman, M. J., & Mohammad, W. M. R. W. (2021). The effects of wordwall online games (Wow) on english language vocabulary learning among year 5 pupils. Theory and Practice in Language Studies, 11(9), 1059-1066.
15) Herkes, S. M., Gordon-Thomson, C., Arnaiz, I. A., Muir, M. M., Wardak, D., & King, D. A. (2021). Reduced failure rates associated with playing a new online game developed to support learning of core content in human systems physiology. Advances in Physiology Education, 45(4), 769-778.
16) Hooshyar, D., Ahmad, R. B., Yousefi, M., Fathi, M., Abdollahi, A., Horng, S.-J., & Lim, H. (2016). A solution-based intelligent tutoring system integrated with an online game-based formative assessment: development and evaluation. Educational Technology Research and Development, 64(4), 787-808. https://doi.org/10.1007/s11423-016-9433-x
17) Hummel, H., Geerts, W., Slootmaker, A., Kuipers, D., & Westera, W. (2015). Collaboration scripts for mastership skills: online game about classroom dilemmas in teacher education. Interactive Learning Environments, 23(6), 670-682.
18) Jabbari, N., & Eslami, Z. R. (2019). Second language learning in the context of massively multiplayer online games: A scoping review. ReCALL, 31(1), 92-113.

19) Jones, S. M., Katyal, P., Xie, X., Nicolas, M. P., Leung, E. M., Noland, D. M., & Montclare, J. K. (2019). A 'KAHOOT!'approach: the effectiveness of game-based learning for an advanced placement biology class. Simulation & Gaming, 50(6), 832-847.
20) Katemba, C. V., Tobing, J. H., & Putri, T. A. (2022). Kahoot! Games Enhance Vocabulary Learning? Journal of Elementary Education, 15(3), 393-408.
21) Kayaaltı, M. (2018). A literature review on the impact of online games in learning vocabulary. International Journal of Scientific and Research Publications, 8(2), 312-317.
22) Klisch, Y., Miller, L. M., Beier, M. E., & Wang, S. (2012). Teaching the biological consequences of alcohol abuse through an online game: impacts among secondary students. CBE—Life Sciences Education, 11(1), 94-102.
23) Kuo, M.-J. (2007). How does an online game based learning environment promote students' intrinsic motivation for learning natural science and how does it affect their learning outcomes? 2007 First IEEE International Workshop on Digital Game and Intelligent Toy Enhanced Learning (DIGITEL'07),
24) Marklund, B. B., & Taylor, A.-S. A. (2016). Educational Games in Practice: The challenges involved in conducting a game-based curriculum. Electronic Journal of e-Learning, 14(2), pp122-135-pp122-135.
25) McCall, J. (2016). Teaching history with digital historical games: An introduction to the field and best practices. Simulation & Gaming, 47(4), 517-542.
26) Mohamad, M., Arif, F. K. M., Alias, B. S., & Yunus, M. M. (2020). Online game-based formative assessment: Distant learners post graduate students' challenges towards Quizizz. International Journal of Scientific and Technology Research, 9(4), 994-1000.
27) Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Group*, P. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. Annals of internal medicine, 151(4), 264-269. https://doi.org/10.7326/0003-4819-151-4-200908180-00135
28) Moreno, J., & Méndez, N. D. (2015). Teaching sciences in K-12 using 2D educational massive online games. Conferencias LACLO, 6(1), 394.
29) Nawawi, N., & Kusnoto, Y. (2019). An analysis of online game influence toward the biology learning achievement of students at sman 1 suhaid and smpn 1 suhaid, kapuas hulu. Indonesian Journal of Biology Education, 2(2), 14-20.
30) Octaberlina, L. (2021). Using online game for Indonesian EFL learners to enrich vocabulary.
31) Ouariachi, T., Dolores Olvera-Lobo, M., & Gutierrez-Perez, J. (2017). Evaluation of online games for teaching and learning on climate change. Enseñanza de las Ciencias, 35(1), 193-214.
32) Pede, J. (2017). The effects of the online game Kahoot on science vocabulary acquisition. Rowan University.
33) Shaaruddin, J., & Mohamad, M. (2017). Identifying the effectiveness of active learning strategies and benefits in curriculum and pedagogy course for undergraduate TESL students. Creative Education, 8(14), 2312-2324.
34) Ubaidullah, N., Hamid, J., & Mohamed, Z. (2019). Integrating the arcs motivational elements into an on-line game-based learning application: Does the application enhance students' motivation in learning programming. International Journal of Innovative Technology and Exploring Engineering, 8(11), 1493-1501.
35) Van Eck, N., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. scientometrics, 84(2), 523-538.
36) Zirawaga, V. S., Olusanya, A. I., & Maduku, T. (2017). Gaming in education: Using games as a support tool to teach history. Journal of Education and Practice, 8(15), 55-64.