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Beyond Crisis Response: A Bibliometric Review of Online Learning Evaluation and the Pedagogical Potential of Gamified Tools

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ABSTRACT: *This study aims to map trends, thematic evolution, and gaps in the scientific literature concerning online learning evaluation, specifically the utilization of gamified platforms such as Kahoot. This systematic review employs a quantitative bibliometric approach, analyzing articles from the Google Scholar database for the period 2018–2022. The analysis was conducted using the Publish or Perish application for data collection and VOSviewer for network, overlay, and density visualization to identify citation patterns and conceptual clusters. The results indicate a significant surge in publications in 2021, driven by the need for emergency evaluation during the COVID-19 pandemic. The discussion reveals that the literature tends to focus on pragmatic aspects and tool adoption, with limited conceptual linkages to deeper theoretical constructs such as assessment as learning and self-regulation. The key finding highlights the need to shift from "how-to" facilitation-focused research toward exploring how technology can transform assessment practices to support deeper learning. The implication is that future research should investigate intentionally designed, pedagogically sound online evaluations that leverage the unique affordances of digital and game-based tools to foster 21st-century competencies, as well as examine their long-term impact and causal pathways beyond the crisis context.*

Keywords: *Bibliometric Analysis, Online Learning Evaluation, Gamification, Kahoot, Assessment as Learning, VOSviewer, Research Trends*

ABSTRAK: Penelitian ini bertujuan untuk memetakan tren, evolusi tematik, dan kesenjangan dalam literatur ilmiah terkait evaluasi pembelajaran online, khususnya pemanfaatan platform gamifikasi seperti Kahoot. Kajian sistematis ini menggunakan pendekatan bibliometrik kuantitatif dengan menganalisis artikel dari database Google Scholar periode 2018-2022. Analisis dilakukan menggunakan aplikasi Publish or Perish untuk pengumpulan data dan VOSviewer untuk visualisasi jaringan, overlay, dan densitas guna mengidentifikasi pola sitasi dan kluster konseptual. Hasil analisis menunjukkan lonjakan signifikan publikasi pada tahun 2021, didorong oleh kebutuhan evaluasi darurat selama pandemi COVID-19. Diskusi mengungkap bahwa literatur cenderung berfokus pada aspek pragmatis dan adopsi alat, dengan keterkaitan konseptual yang terbatas terhadap konstruk teoritis mendalam seperti *assessment as learning* dan regulasi-diri. Temuan utama menyoroti perlunya transisi dari penelitian yang berorientasi pada "cara menggunakan" (*facilitation*) menuju eksplorasi bagaimana teknologi dapat mentransformasi praktik penilaian (*transformation*) untuk

mendukung pembelajaran yang lebih mendalam. Implikasinya, penelitian ke depan perlu menyelidiki desain evaluasi online yang secara pedagogis intentional, memanfaatkan keunikan affordances digital dan berbasis permainan untuk mengembangkan kompetensi abad ke-21, serta meneliti dampak jangka panjang dan jalur kausalnya di luar konteks krisis.

Kata Kunci: Analisis Bibliometrik, Evaluasi Pembelajaran Online, Gamifikasi, Kahoot, Assessment as Learning, VOSviewer, Tren Penelitian

I. INTRODUCTION

Education is a conscious effort aimed at enhancing the potential of human resources (HR) through learning activities that help students develop themselves to the fullest (Kuswandi et al., 2025). This development encompasses all potentials, including skills and personal characteristics. This aligns with the Indonesian Law on the National Education System No. 22 of 2003, which states that education is an effort to enable students to actively develop their inherent potential, such as religiosity, self-control, personality, intelligence, and skills necessary for life in society, the nation, and the state. It is undeniable that the improvement in human resource quality is primarily due to education (Damayanti & Dewi, 2021).

In simple terms, learning is the process by which humans acquire knowledge and skills (Zh et al., 2024). This process can occur anywhere, anytime, and by anyone, as learning is an ongoing process (Kurniasih et al., 2025). Meanwhile, teaching refers to a structured learning activity with specific objectives that learners (students) must achieve to be considered as having undergone a learning process. The key difference between the two lies in their purpose. Learning is a lifelong process without specific achievement targets, whereas teaching includes specific objectives that learners must reach as a measure of their competency before and after the learning process.

To determine whether a learner has mastered or achieved the desired objectives, evaluation activities are conducted. In the learning process, evaluation is a crucial component. Evaluation provides insights into students' mastery of a subject, identifies learning difficulties, and assesses students' relative standing among their peers (Setemen, 2010). Assessment is carried out to measure the overall achievement of curriculum objectives established at a certain educational level (summative assessment). The results serve as a report on students' learning outcomes to students themselves, teachers, parents, society, and the government as a form of accountability in education (Nuriyah, 2014).

The rapid advancement of technology offers innovations that support the optimization of effective learning evaluation, as technology provides various conveniences. The utilization of technology in the learning process enhances students' learning activities. One example of leveraging technological advancements in education is the Kahoot! learning application. According to Iwamoto et al. (2017), Kahoot! is an online application that allows users to develop and present questions in a "game-show" format. Meanwhile, Graham (2015) describes Kahoot! as an online learning medium containing free or non-paid questions applied in the learning process to evaluate students' learning outcomes. Kahoot! features quiz questions in a game-show format that can be accessed for free.

The questions in this application can be supplemented with images or videos to clarify the content. The operation of Kahoot! is straightforward; it can be accessed via an application or a website, making it practical to use. The evaluation system using Kahoot! allows teachers to immediately view students' learning results, as the points earned by students are displayed instantly after they answer a question. Unlike conventional evaluation systems, which require a long time to assess students' learning outcomes because teachers need to manually correct students' work, Kahoot! significantly reduces the time required for evaluation. Especially during the current pandemic, conventional evaluation methods are no longer effective (Damayanti & Dewi, 2021).

II. METHOD

This study employs a descriptive quantitative method using a bibliometric approach. Bibliometric analysis is a quantitative method used to analyze bibliographic data in articles or journals. This analysis is typically utilized to investigate the references of scientific articles cited in journals, to map the scientific fields of journals, and to classify scientific articles according to research domains.

The bibliometric analysis approach used in this study includes citation analysis to examine articles cited by other articles using the VOSViewer application and co-citation analysis to identify two or more articles cited by a single article using Mendeley and Publish or Perish applications. The research data comprises scientific articles or journals from the years 2018-2022, sourced from the Google Scholar database. The search for scientific articles was conducted directly on the scholar.google.com website using the keyword "Online Learning Evaluation."

Furthermore, the publication model development map of Online Learning Evaluation analyzed using the VOSViewer software is presented in Figure 1.

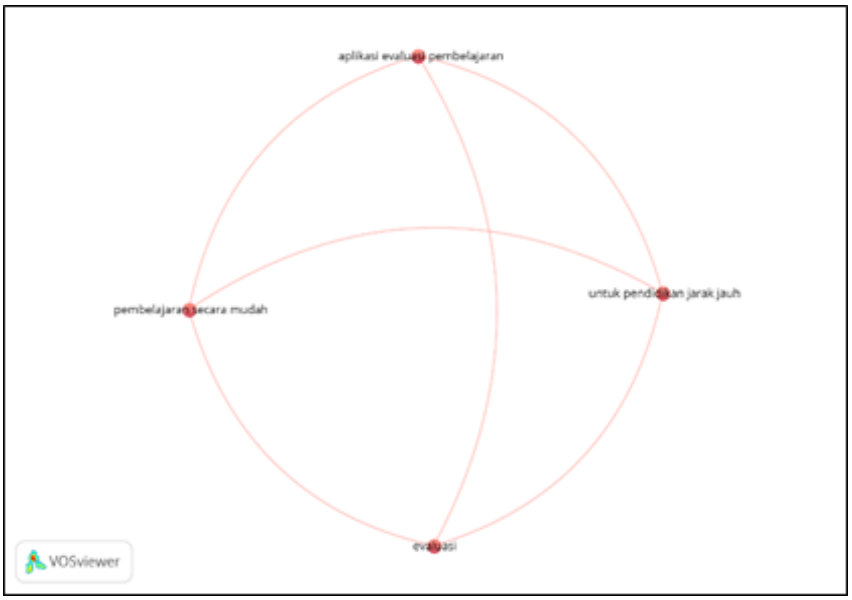

Figure 1. Online learning evaluation variable items with other variables using network visualization in VOSViewer

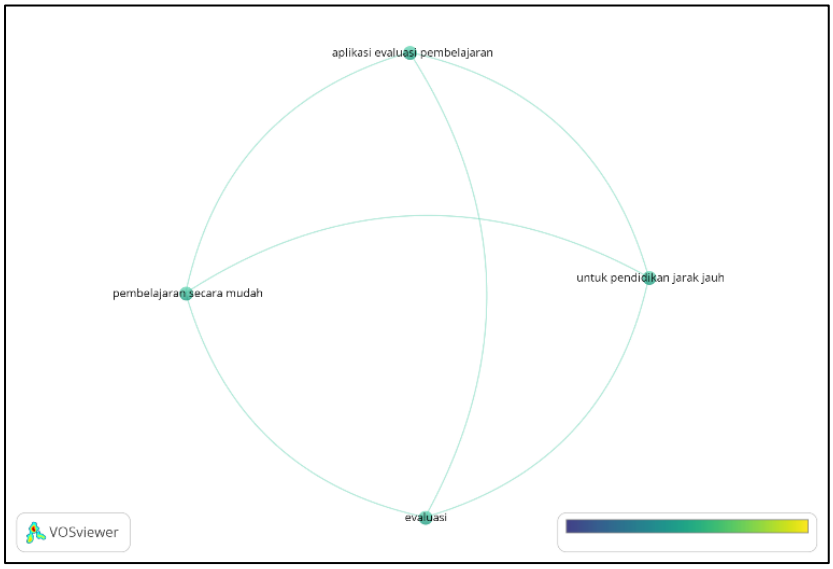

Figure 2. Online learning evaluation variable items with other variables using overlay visualization in VOSViewer.

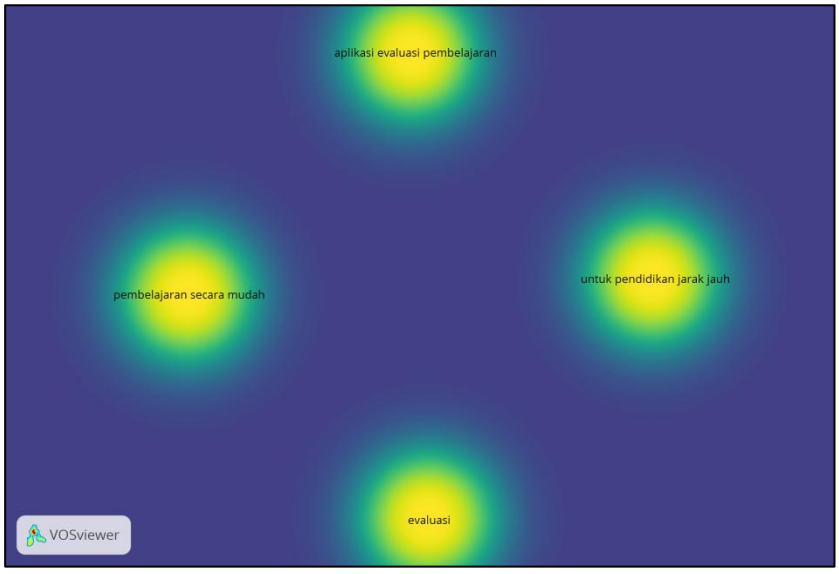

Figure 3. Online learning evaluation variable items with other variables using density visualization in VOSViewer.

Through the VOSviewer application, we can visualize and analyze trends in the form of bibliometric maps. The author then maps article data from the prepared database sources. The data mapping consists of three types: network visualization, overlay visualization, and density visualization. Additionally, we filter the terms to be included in the VOSviewer network mapping visualization (Novia et al., 2022).

III. RESULT AND DISCUSSION

Result

From the search results using the Publish or Perish application, out of the maximum search limit of 1,000 articles, 11 article titles were found that matched the predefined keywords, as shown in Figure 4.

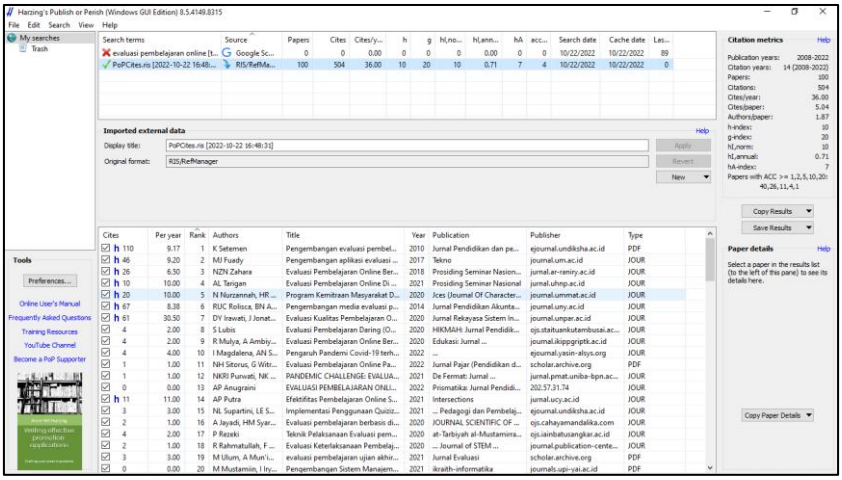

Figure 4. Search results for articles using Publish or Perish.

The development of publications on the topic of Online Learning Evaluation between 2018 and 2022 includes 69 papers, with 5 papers having undetected publication years. Table 1 shows that the highest number of publications occurred in 2021, with a total of 33 published articles.

Tahun Publikasi	Jumlah Artikel
2022	11
2021	33
2020	19
2019	4
2018	2

Table 1. Number of articles from 2018 to 2022.

From the articles found based on the targeted keywords, the author selected five articles that are more relevant to this study without considering the year of publication or the number of citations.

Discussion

The bibliometric analysis of publications sourced from Google Scholar between 2018 and 2022, using the specific keyword "Online Learning Evaluation," provided a targeted dataset for examination. Initial filtering through the Publish or Perish application identified 11 articles that met the precise search criteria from a broader pool of 1,000 potential entries, as illustrated in Figure 4. However, a wider chronological review uncovered a more substantial corpus of 69 relevant publications within the five-year span. Notably, Table 1 reveals a dramatic surge in scholarly output, with the year 2021 showing the highest volume of publications (n=33). This peak

appears to be both precipitated and followed by significant fluctuations: a sharp rise from the preceding year 2020 (n=19) and a considerable decline in 2022 (n=11). This pattern visually aligns with the network and overlay visualizations generated by VOSViewer (Figures 1 & 2), which trace the thematic evolution and concentration of research over time. Furthermore, the density visualization (Figure 3) effectively highlights the conceptual clustering of pivotal terms such as "online learning," "assessment," and "Covid-19" around the central node of "students," thereby anchoring the academic discourse firmly within the context of the pandemic-induced educational transformation.

The quantitative trends emerging from this bibliometric review invite a deeper, more critical interrogation of the scholarly conversation surrounding online learning evaluation, particularly regarding the adoption of tools like Kahoot. The explosive growth in publications during 2020 and 2021, as clearly quantified in our results, serves as a stark bibliometric indicator of the global educational disruption caused by the COVID-19 pandemic. This observed trend is squarely in line with the empirical findings of scholars like Sitorus et al. (2022) and Tarigan (2021), who consistently identified the health crisis as the primary catalyst for the rapid, often emergency-driven, adoption of digital assessment tools. Interestingly, the subsequent decline in publication numbers by 2022 may signal a transitional phase: the initial wave of reactive, practice-oriented studies documenting immediate solutions could be giving way, one hopes, to more reflective, longitudinal, or theoretically grounded analyses of the post-pandemic educational landscape.

The strong centrality of terms like "Covid-19" and "students" within our bibliometric maps underscores a crucial point: a significant portion of the recent literature has been profoundly shaped by the context of emergency remote teaching. While this corpus of work, exemplified by studies from Faizin (2021) and Jayadi & Syarafuddin (2020), has been undeniably valuable in cataloguing practical challenges and immediate logistical solutions, it has frequently approached evaluation through a lens of necessity rather than one of pedagogical opportunity. Contrary to this predominantly pragmatic focus, our analysis suggests that deeper scholarly engagement with the formative and transformative potential of online evaluation tools remains less prominent. Many studies, for instance, have convincingly corroborated Kahoot's utility in boosting student engagement and streamlining the administration of summative quizzes, extending the foundational observations of Iwamoto et al. (2017) and Graham (2015). This is robustly supported by a growing body of international research, including applications in control theory courses (Rotondo & Sánchez, 2024), nursing education (Coveney et al., 2022; Kuo & Chuang, 2018), animal science (Cameron & Bizo, 2019), and language assessment (Pavlenko, 2025; Darwis et al., 2024). Yet, far fewer have ventured to rigorously explore its capacity to foster sustained metacognitive skills or to integrate seamlessly into continuous feedback loops that actively shape instructional design in virtual settings.

This review, therefore, seeks to offer a novel perspective by synthesizing these observable trends to posit that the field is now at a critical juncture. The initial, and largely complete, "how-to" phase of implementing basic online evaluations has been thoroughly documented in works by pioneers like Setemen (2010) and Fuady (2017). Unlike prior reviews that primarily catalog available tools and measure user satisfaction, our bibliometric mapping points toward a significant gap, thereby charting a course for future research. The imperative now is to shift from investigating how

to *facilitate* assessment online to understanding how to fundamentally *transform* assessment practices *through* the unique affordances of digital and game-based methodologies. In doing so, the findings reveal an understudied aspect of the literature: the relatively weak conceptual connections in our bibliometric networks between core "evaluation" nodes and more sophisticated theoretical constructs like "self-regulated learning," "feedback literacy," or "assessment *as* learning," particularly for sustained online or hybrid models beyond the crisis period. While studies like those of Campillo-Ferrer et al. (2020) on civic competencies and Portela (2023) on individual assessment gamification hint at this potential, they remain islands of innovation rather than indicators of a consolidated theoretical shift.

The findings of this review also extend the earlier observations of scholars like Damayanti & Dewi (2021) regarding technological efficiency. While their emphasis on Kahoot's time-saving benefits remains valid, our synthesis proposes that its true innovation and academic contribution may reside in a different realm altogether. Kahoot's inherent game-based mechanics think real-time points, leaderboards, and instant feedback introduce a distinct psycho-social layer to the evaluation process. This adds considerable nuance to the prevailing understanding of online assessment. It positions platforms like Kahoot not as simple digital analogues for paper-based tests, but as active mediators that can potentially mitigate assessment anxiety, enhance intrinsic motivation through structured gamification, and cultivate a safer space for iterative, low-stakes formative practice. This potential, while occasionally hinted at in earlier works such as Zahara (2018), and more recently explored in contexts like immunology education (Lohitharajah & Youhasan, 2022) and psychology (Warsihna et al., 2019), has seldom been the central focus of robust theoretical exploration or empirical validation across diverse disciplines. Notably, the effectiveness of these mechanics in promoting not just engagement but deeper cognitive processes, as suggested by Tandiono (2024) and Tsihouridis et al. (2018), requires further disentanglement from the novelty effect.

Consequently, the novelty of this study lies in its dual-layered contribution to the discourse. Firstly, it delivers a quantifiable, visually articulated cartography of the research domain, objectively capturing the pandemic-centric surge and its primary thematic preoccupations. Secondly, and we argue more importantly, it employs this analytical map to diagnose a pressing maturation gap in the existing scholarship. The primary new contribution of this review, when contrasted with previous systematic analyses, is its forward-looking and critical posture. It deliberately moves beyond merely summarizing *what has already been examined*. Namely, the proliferation of tool-centric case studies during an emergency to articulate a clear vision for *what now demands deeper scholarly attention*. The agenda ahead should focus on the intentional, pedagogically-sound design of online evaluations that fully leverage their unique affordances to promote deeper learning, ensure greater equity, and develop essential 21st-century competencies, all within a landscape that is no longer defined solely by crisis-response. Future research must build upon comparative studies of gamified tools (Maraza-Quispe et al., 2024) and investigations into academic performance (Tsarev et al., 2025) to establish causal pathways and long-term impact, moving from documenting positive perceptions to isolating the pedagogical conditions under which gamified assessment truly enhances learning outcomes.

IV. CONCLUSION

Based on an analysis of several articles in Google Scholar and a bibliometric approach using the Publish or Perish and VOSviewer applications, it can be concluded that research trends related to online learning evaluation have increased, particularly in 2021 within the Google Scholar database. This rise is attributed to external factors, specifically the global pandemic, including its impact on Indonesia, which necessitated online learning evaluation. During the pandemic, students did not attend school physically but instead participated in online learning. Exams were also shifted to an online format, allowing students to complete their assessments remotely without having to be physically present at school.

Assessment in distance learning remains essential, not merely to establish achievement standards or grading purposes. The primary objective of distance learning assessment should be to assist students in discovering better learning strategies for themselves. The advent of digital technology and the internet has facilitated virtual assessments, making the evaluation process more efficient and accessible. Kahoot is an appropriate application for learning evaluation, as it is a free platform that enhances classroom interactivity through teacher-created quizzes or surveys for examination and final assessment purposes. Additionally, Kahoot can boost student participation and cognitive engagement by integrating game-based learning (Tsihouridis, 2018:604).

V. REFERENCES

[1] Cameron, K. E., & Bizo, L. A. (2019). Use of the game-based learning platform KAHOOT! to facilitate learner engagement in animal science students. *Research in Learning Technology, 27*, 1–14. https://doi.org/10.25304/rlt.v27.2225

[2] Campillo-Ferrer, J.-M., Miralles-Martínez, P., & Sánchez-Ibáñez, R. (2020). Gamification in higher education: Impact on student motivation and the acquisition of social and civic key competencies. *Sustainability, 12*(24), 4822. https://doi.org/10.3390/su12224822

[3] Coveney, K., Somanadhan, S., Nicholson, E., & Gazzelloni, A. (2022). First year nursing students' evaluation of Kahoot! to facilitate learning and testing knowledge. A pilot study in Ireland and Italy. *Teaching and Learning in Nursing, 17*(3), 308–312. https://doi.org/10.1016/j.teln.2022.02.008

[4] Darwis, N., Astuty, A. D., & Ilmi Hl, S. N. (2024). Facilitating secondary school teachers in using game-based application for online summative assessment. *Teaching English Language, 18*(1), 147–174. https://doi.org/10.22132/tel.2024.2017775.1663

[5] Faizin, K. (2021). Evaluasi penggunaan aplikasi pembelajaran online mahasiswa STAI Attanwir Bojonegoro. *Fikroh: Jurnal Pemikiran Dan Pendidikan Islam, 14*(2), 104-113.

[6] Fuady, M. J. (2017). Pengembangan aplikasi evaluasi pembelajaran online untuk pendidikan jarak jauh. *Tekno, 26*(2).

[7] Graham, K. (2015). TechMatters: Getting into the game: Kahoot! for library instruction. *LOEX Quarterly, 42*(3), Article 3.

[8] Iwamoto, D. H., Hargis, J., Taitano, E. J., & Vuong, K. (2017). Analyzing the efficacy of the testing effect using Kahoot™ on student performance. *Turkish Online Journal of Distance Education, 18*(2), 80-93. https://doi.org/10.17718/tojde.306561

[9] Jayadi, A., & Syarafuddin, H. M. (2020). Evaluasi pembelajaran berbasis digital online. *JOURNAL SCIENTIFIC OF MANDALIKA (JSM) e-ISSN 2745-5955, 1*(4 November), 410-416.Kuo, C.-L., & Chuang, Y.-H. (2018). Kahoot: Applications and effects in education. *The Journal of Nursing, 65*(6), 22-29. https://doi.org/10.6224/JN.201812_65(6).04

[10] Kurniasih, D. D., ZH, M. H. R., Ayunisa, D. A., Maryono, M., Mustofa, K., & Siswanto, S. (2025). Analysis of awareness and confidence in learning outcomes with students' academic motivation: SEM approach. *Jurnal Inovasi Teknologi Pendidikan*, *12*(1), 58–67

[11] Kuswandi, D., Fadhli, M., Zh, M. H. R., Haditia, M., Sinaga, M. N. A., Thaariq, Z. Z. A., & Ardiansyah, A. (2025). Implementation of personalized approach in video editing learning to improve digital competency of 21st century learners. *JCP JURNAL CAHAYA PENDIDIKAN*, *11*(1)

[12] Lohitharajah, J., & Youhasan, P. (2022). Utilizing gamification effect through Kahoot in remote teaching of immunology: Medical students' perceptions. *Journal of Advances in Medical Education and Professionalism, 10*(4), 229–237. https://doi.org/10.30476/jamp.2022.95009.1649

[13] Maraza-Quispe, B., Traverso-Condori, L. C., Torres-Gonzales, S. B., & Carpio-Ventura, J. R. (2024). Impact of the use of gamified online tools: A study with Kahoot and Quizizz in the educational context. *International Journal of Information and Education Technology, 14*(5), 729–736. https://doi.org/10.18178/ijiet.2024.14.5.2102

[14] Novia, N., Fadillah, A., & Wijaya, T. T. (2022). Analisis bibliometrik: Tren penelitian berpikir kritis dalam pembelajaran matematika (2017-2021). *Jurnal Cendekia: Jurnal Pendidikan Matematika, 6*(2), 1266-1280.

[15] Nuriyah, N. (2014). Evaluasi pembelajaran: Sebuah kajian teori. *Jurnal Edukasi Sebelas April, 1*(1), 1-10.

[16] OKTA, F. (2022). *ANALISIS BIBLIOMETRIK: SCIENCE TECHNOLOGY AND SOCIETY (STS) DALAM PEMBELAJARAN SAINS* (Doctoral dissertation, UIN RADEN INTAN LAMPUNG). Institutional Repository UIN Raden Intan Lampung. http://repository.radenintan.ac.id/21234/

[17] Pavlenko, O. (2025). Tech-savvy language assessment: Leveraging nine educational platforms and gamified digital tools. In M. Ivanova (Ed.), *Assessment of Russian as a Foreign Language: Unlocking Proficiency* (pp. 145–169). Springer. https://doi.org/10.1007/978-3-031-56743-5_8

[18] Portela, F. (2023). A new approach to perform individual assessments at higher education using gamification systems. In *OpenAccess Series in Informatics (OASIcs)* (Vol. 112, pp. 12:1–12:15). Schloss Dagstuhl – Leibniz-Zentrum für Informatik. https://doi.org/10.4230/OASIcs.ICPEC.2023.12

[19] Rotondo, D., & Sánchez, H. S. (2024). Experiences with using Kahoot! in control theoretical courses. In *2024 European Control Conference (ECC)* (pp. 1234–1239). IEEE. https://doi.org/10.23919/ECC64448.2024.10591022

[20] Setemen, K. (2010). Pengembangan evaluasi pembelajaran online. *Jurnal Pendidikan dan Pengajaran, 43*(3).

[21] Sitorus, N. H., Witri, G., & Noviana, E. (2022). Evaluasi Pembelajaran Online Pada Masa Pandemi Covid-19 Pada Siswa Kelas 5 SD Negeri 45 Pekanbaru. *Jurnal Pajar (Pendidikan dan Pengajaran), 6*(2), 389-394.

[22] Tandiono, R. (2024). Gamifying online learning: An evaluation of Kahoot's effectiveness in promoting student engagement. *Education and Information Technologies, 29*(8), 9837–9856. https://doi.org/10.1007/s10639-023-12242-1

[23] Tarigan, A. L. (2021, December). Evaluasi Pembelajaran Online Di Masa Pandemi Covid-19 Di Kecamatan Minas. In *Prosiding Seminar Nasional* (Vol. 1, No. 1).

[24] Tsarev, R., Roncevic, I., Potekhina, E., & Muracova, N. (2025). Gamification of e-learning through Kahoot! to improve students' academic performance. In A. Gibadullin (Ed.), *Lecture Notes in Networks and Systems* (Vol. 1098, pp. 367–378). Springer. https://doi.org/10.1007/978-3-031-77791-4_33

[25] Tsihouridis, C., Vavougios, D., & Ioannidis, G. S. (2018). Assessing the learning process playing with Kahoot – A study with upper secondary school pupils learning electrical circuits. In *Advances in Intelligent Systems and Computing* (Vol. 725, pp. 376–386). Springer. https://doi.org/10.1007/978-3-319-75175-7_37

[26] Warsihna, J., Ramdani, Z., & Prakoso, B. H. (2019). Using kahoot to improve students' achievement and critical thinking in undergraduate of psychology students. In *Proceedings of the 16th International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2019)* (pp. 323-327). IADIS Press.

[27] Zahara, N. Z. N. (2018, April). Evaluasi Pembelajaran Online Berbasis Web Sebagai Alat Ukur Hasil Belajar Siswa Pada Materi Dunia Tumbuhan Kelas X Man Model Banda Aceh. In *Prosiding Seminar Nasional Biotik* (Vol. 3, No. 1)

[28] Zh, M. H. R., Sani, N. L., Kuswandi, D., & Fadhli, M. (2024). Needs Analysis of Development FBO Media as a Support for Blended learning in Al- Qur ' an Hadits Lesson. *Jurnal Pendidikan Agama Islam Al-Thariqah*, *9*(1). https://doi.org/10.25299/al-thariqah