

INTERACTIVE LEARNING INNOVATIONS TO BUILD STUDENT LEARNING ACTIVITY: A LITERATURE REVIEW 2020-2025

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Abstract

This study aims to systematically review the literature on the implementation of interactive learning innovations in the 2020–2025 period and provide practical recommendations for their implementation in schools. The study used a systematic literature review approach with reference to the PRISMA framework. Data were collected from various databases and scientific sources, with a total of 1,219 articles identified. The selection process was carried out through screening, feasibility assessment, and quality evaluation, resulting in 65 relevant articles for further analysis. The study findings indicate that the use of digital technology, the implementation of project-based learning models, gamification strategies, and collaborative platforms consistently improve student learning engagement by increasing intrinsic motivation, interaction, and collaboration among students. However, this study also identified several obstacles, such as limited technological facilities, teacher readiness to integrate learning technology, and variations in students' adaptability to digital systems. Therefore, ongoing training for teachers, institutional policy support, and the integration of technology-based pedagogy into the curriculum are needed to create a more participatory, inclusive, and collaborative learning environment in the digital era.

Keywords: *Interactive, Innovation, Student, Active Learning*

INTRODUCTION

The development of research in the field of education in the last five years shows that there has been an increase in researchers' interest in learning innovations that are more interactive and student-centered. This is marked by the large number of scientific publications that focus on innovative learning strategies to encourage student learning activity. However, to obtain a comprehensive and comprehensive picture of the topic, a systematic literature review is needed in order to identify research trends, gaps, and relevant key findings. According to (Martín-Alguacil & Avedillo, 2024) A systematic study is needed to map the direction of research comprehensively. In the last five years, the world of education has undergone a rapid transformation along with the development of digital technology and the demands of 21st century learning. This development has encouraged the emergence of various interactive learning innovations that are oriented towards the active involvement of students in the learning process. According to (Fitria & Susanto, 2022). The use of interactive video-based media is able to increase student participation and learning motivation because it provides a more interesting and meaningful learning experience. Through an interactive approach, students not only become recipients of information, but also engage in the process of exploration, reflection, discussion, and problem solving that are relevant to real life, so that they can overcome the low learning activity that generally occurs in conventional methods such as lectures and memorization.

The urgency of this research has become increasingly important along with the change in the educational paradigm after the COVID-19 pandemic. The pandemic has driven the acceleration of technology adoption in the education sector, including the use of digital platforms, online learning, and interactive learning resources. This change also emphasizes the importance of flexibility in the learning process, so teachers and students need to adjust learning methods and strategies to remain effective, adaptive, and able to face various new challenges. Thus, research on innovation in digital and interactive learning becomes relevant to understand how technology can support the quality of education and increase student engagement and learning activity in the post-pandemic era (Salsabila et al., 2023). According to (I. Rahmawati, 2022), learning models such as Project Based Learning (PjBL), Problem Based Learning (PBL), and digital gamification are able to significantly increase the participation and learning motivation of elementary school students. These models provide opportunities for students to work together, think creatively, and relate the subject matter to the context of daily life. This is in line with the principle of Freedom of Learning

which emphasizes meaningful, contextual, and experience-based learning. Recent research shows that the use of interactive digital media such as animated videos, quiz applications, and multimedia presentation platforms significantly increases students' activeness in the learning process. The use of interactive media has been proven to be able to encourage active student involvement through discussion activities, self-exploration, and direct feedback that enrich the learning process. This is in line with the findings (Handayani et al., 2022) which shows that the application of interactive multimedia can significantly improve student activeness and learning outcomes. Thus, interactive learning innovations have a real contribution to improving the quality of learning processes and outcomes in modern educational environments.

However, the implementation of interactive learning in elementary schools still faces significant obstacles. Many teachers have not mastered the digital pedagogic skills needed to design and run technology-based learning effectively. This condition is caused by a combination of factors, such as limited facilities/infrastructure, limited access to training, and low digital literacy of teachers, so that the use of digital media is often ad-hoc and has not been integrated in learning design (Rahayuningsih & Muhtar, 2022). The availability of supporting facilities such as technology devices, internet networks, and school support is still a challenge in the implementation of interactive digital learning in elementary schools. Research conducted by (Kuntarto & Prakash, 2020) explained that digital literacy in elementary school students is still at the stage of basic introduction and understanding, especially related to the ability to use technological devices and access digital information independently. In these findings, teachers have an important role in guiding students to be able to utilize technology positively and productively, especially in digital-based learning activities. However, the limitations of technological facilities and the lack of parental understanding of the use of digital devices at home are obstacles in the development of students' digital literacy.

The learning activity of students themselves is an important indicator in assessing the effectiveness of the learning process. Active students tend to have high levels of learning motivation, critical thinking skills, and better social skills (Utami et al., 2023). This is reinforced by research that shows that when students are actively engaged through interactive media and learning methods, discussion participation, courage to ask questions, and collaboration between students increases significantly. Thus, efforts to increase student activity, both through the selection of media, models, and conducive classroom atmosphere, are important tasks for teachers and educational institutions to ensure a more effective and meaningful learning process for all students. Interactive learning creates a learning atmosphere that encourages students to participate, express opinions, and collaborate with classmates, making the classroom atmosphere more lively and meaningful (Syafira et al., 2024). In the context of primary education, learning activeness is not only measured from cognitive involvement, but also from the affective and psychomotor aspects of students, these findings are supported by several studies of interactive media development and blended learning at the elementary level that show an increase in students' affective and psychomotor involvement (Sholihah et al., 2023).

An interactive learning environment not only strengthens the pedagogical aspect, but also has a significant impact on the social and psychological dimensions of students. When students engage in digital-based collaborative learning, they gain the opportunity to hone confidence in conveying ideas, practice communication skills in teams, and foster empathy through interactions with peers. In this context, digital collaboration-based learning has been proven to help develop the ability to work in teams which is one of the key skills of the 21st century. For example, research by (Febrianti, 2025) states that the application of a group-based approach supported by digital media can improve students' communication, problem-solving, and cooperation skills. The Effectiveness of Technology-Based Interactive Media in Improving Student Learning Outcomes in Mathematics Learning in Elementary School (Amirah et al., 2025). Research shows that the use of interactive media such as BARUBA, Edmodo, Wordwall, Adobe Flash CS6 significantly increases students' desire to learn and understand concepts.

By reviewing various research results over the past five years, this article aims to provide a comprehensive understanding of trends, effectiveness, and challenges in the implementation of interactive learning innovations. This study is expected to be a reference for educators, researchers, and policymakers in developing more adaptive, creative, and sustainable learning strategies in the digital era. In the end, interactive learning is not just the use of technology, but a paradigm transformation towards education that is more humanistic, collaborative, and oriented towards the development of students' potential as a whole. The literature review process follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standard, which aims to ensure transparency and accuracy in the search and selection of articles. Based on the identification results, as many as 1,219 articles were found through databases (n=1,000) and registers (n=219). After going through the initial screening stage, a total of 91 articles were removed due to duplication, 8 articles were eliminated by automation tools, and 47 articles were removed for other reasons.

The next screening stage resulted in 20 articles that could be reviewed, while 138 articles were removed for not meeting the criteria. Out of this process, 325 reports were submitted for review, but 261 were not accessible. Then, as many as 45 reports were assessed as eligible, but some had to be eliminated due to author duplication (n=325), lack of abstracts (n=261), and lack of links (n=45). Based on the title "Interactive Learning Innovations to Build Student Learning Activity: A Literature Review 2020–2025", the formulation of the problems in this study is formulated as follows. First, how is the development of interactive learning innovations in the 2020–2025 period. Second, what are the forms and strategies of interactive learning that are effective in increasing student learning activity. Third, how does the application of interactive learning affect the level of student learning activity based on the results of literature studies that have been carried out in that time span. The formulation of this problem is the basis for analyzing various previous studies to obtain a comprehensive picture of the application of interactive learning in increasing student learning activity.

The purpose of this study is to identify research trends on interactive learning innovations in the period 2020–2025, analyze the effectiveness of various interactive learning models in increasing the learning activity of elementary school students, and uncover the challenges and opportunities for their application in the context of basic education. The benefits of this research are not only theoretical contributions in the form of comprehensive mapping to the development of interactive learning innovation studies, but also practical contributions through strategic recommendations for teachers, schools, and policymakers to design learning that is adaptive, innovative, and oriented to 21st century competency development. Thus, the results of this study are expected to be able to strengthen the transformation of education towards a participatory, collaborative, and sustainable learning ecosystem to improve the quality of student learning processes and outcomes.

METHOD

This study uses a systematic literature study approach with the guidance of the PRISMA method. This method was chosen because it is able to provide clear and transparent procedures in the process of searching, filtering, and selecting articles relevant to the research topic. The first stage is the identification of the data source. The researcher searched articles from two main sources, namely databases (1,000 articles) and registers (219 articles). From the initial search results, a total of 1,219 articles were registered as study materials. However, before entering the screening stage, a process of deleting articles that do not meet the technical criteria is carried out. At this stage, 91 duplicate articles were found, 8 articles were declared irrelevant by the automated system, as well as 47 articles that were removed for other reasons. After this process, the number of articles remaining and ready for further screening is 20 articles.

The second stage is screening. Articles that have passed the identification stage are then screened based on the suitability of the title and abstract with the focus of the research. At this stage, as many as 138 articles were removed because they were considered inappropriate. Furthermore, there are 325 articles that are included in the search stage for the complete report. However, not all articles are accessible. A total of 261 reports were not successfully obtained due to technical constraints and limited access, so only a small number of reports could be continued for further analysis. The third stage is the eligibility assessment. The articles that were successfully accessed as many as 45 reports were then analyzed in more detail. However, in this assessment process, there are still articles that must be removed for various reasons, including duplication of authors (n = 325), no abstracts available (n = 261), and article links that cannot be accessed (n = 45).

The last stage is the inclusivity of the study. After going through the process of identification, screening, and feasibility assessment, 65 articles were finally obtained that met all inclusion criteria. These articles are then used as the main source in this literature review and become the basis for analysis and discussion of the research. With this PRISMA procedure, the literature selection process becomes more systematic, transparent, and accountable, so that the results of the study have a stronger validity. The analysis was carried out by examining various models of interactive learning innovations, research objectives, methods used, and results related to increasing student learning activity. In addition, bibliometric mapping was carried out using VOSviewer software to identify the connections between topics, keywords, and research trends regarding interactive learning during the period 2020–2025.

RESULTS AND DISCUSSION

Result

Based on a systematic literature review process that refers to the PRISMA guidelines, this study succeeded in identifying as many as 1,219 articles obtained from various databases and scientific registers. After the removal of duplicate articles and the initial screening based on the suitability of the title and abstract, a number of articles were eliminated because they did not meet the research inclusion criteria. The advanced selection stage resulted in 65 articles that were declared relevant and worthy of further analysis. The flow of the article selection process is presented visually in Figure 1, which describes the stages of identification, screening, feasibility assessment, and inclusion of the articles used in this literature review.

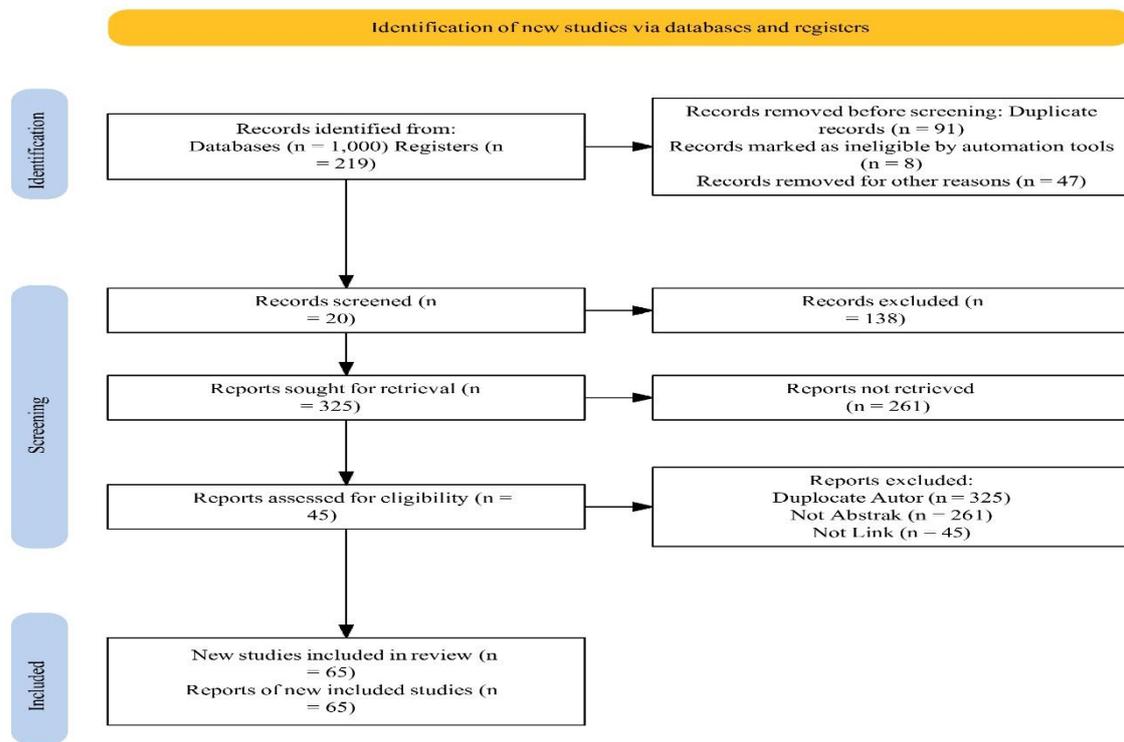


Figure 1. PRISMA Diagram of Research Article Selection Flow

A total of 65 articles analyzed came from the 2020–2025 publication year and focused on the application of interactive learning innovations at the elementary education level. The search results show that these articles use a variety of research designs, ranging from experiments, quasi-experiments, development research, to descriptive studies and literature studies. In general, the innovations studied include the use of interactive digital media, project-based learning models, gamification strategies, online and blended learning, and the use of digital learning platforms. The results of the synthesis showed that the majority of articles reported the positive impact of interactive learning innovations on student learning activity. Around 78% of studies show an increase in student active participation after the implementation of technology-based interactive learning. The Project Based Learning (PjBL) model is the most dominant approach used, with a proportion of around 32% of the total articles studied. In addition, gamification strategies and the use of interactive digital media are also widely applied as an effort to increase student motivation and involvement in the learning process.

Table 1. Journal Review Results

Yes	Writer	Key Findings
1.	Siti Nurhayati, Arif Wibowo (2022)	Interactive android applications are effective in increasing activeness and learning outcomes.
2	Ujang Efendi, Deviyanti Pangestu, Rapani Rapani (2022)	Interactive media based on national values fosters active participation and a sense of nationalism among students.
3	Esa Wasiatul Kiromiah, Indhira Asih V.Y, Aan Nurhasanah (2021)	Interactive LKPD encourages conceptual understanding and active participation in science learning.
4	Yudesta Erfayliana, Oktaria Kusuma Wati (2021)	Interactive models improve students' motor skills and learning participation.
5	Hasan Sastra Negara, Fika Nurlova, Arini Ulfah (2021)	Students are more active in solving problems through interactive discussion-based learning.
6	Muhamad Taufiq Firmansyah (2024)	Interactive digital media increases motivation and understanding of basic mathematical concepts.
7	- The Red Witch (2023)	Interactive online learning fosters student responsibility and activism.
8	Septiana Andeswari, Dudung Amir Sholeh, Linda Agustina (2021)	Project-based LKPD increases motivation and learning participation.
9	Atika Ulya Akmal (2021)	The integration of ethnoscience with interactive learning strengthens student engagement and understanding.
10	Febri Yana Riza, Zariul Antosa, Gustimal Witri (2020)	Multicultural-interactive LKPD fosters tolerance and active participation of students.
11	Moh. Arif Susanto, Elita Arcelina Sandi, Arisna, et al. (2022)	Differentiated learning enhances students' creativity and activeness through a personalized approach.
12	Niken Larasati, Dwi Astuti (2023)	Interactive educational games make students more focused and active in learning.
13	Dian Fitriani, R. Hasanah (2024)	Interactive blended learning enhances student collaboration and participation.
14	Rizka Amelia, Nurul Hidayah (2022)	AR increases the attractiveness of learning and student engagement.
15	Dwi Rahayu, Indra Santosa (2021)	Interactive modules strengthen digital literacy and teacher-student interaction.
16	Ririn Suryani, Heni Oktaviani (2023)	Interactive problem-based learning increases activeness and critical thinking.
17	Anggi Puspitasari, Eko Priyono (2024)	Interactive videos enhance students' exploration of concepts and active discussions.
18	Desti Andriani, Rahmad Taufik (2022)	Interactive collaboration encourages collaboration and responsibility for learning.
19	Lailatul Fitri, Ahmad Fajar (2021)	The interactive web is more effective than conventional methods.
20	Fitria Lestari, Winda Maulida (2024)	The integration of interactive technology makes students more enthusiastic and independent.
21	Nining Purwati, Yunisrul Yunisrul (2023)	Interactive strategies improve learning outcomes and activeness.
22	Della Aprilia, Melva Zainil (2023)	GeoGebra Interactive improves students' visualization and activeness.
23	Vianes Muliza Putri, Tin Indrawati (2023)	Powtoon attracts interest in learning and strengthening understanding.
24	David Pra Utama, Muhammadi Muhammadi (2023)	Interactive models improve thematic learning outcomes.
25	Abdul Khairi, Yalvema Miaz (2023)	Interactive media reinforces local concepts and student activism.
26	Nicken Hafizah, Zuardi Zuardi (2023)	Canva enhances students' creativity and enthusiasm for learning.

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27	Rahmi Kurnia, Muhammadi Muhammadi (2023)	Visualization through interactive videos improves understanding of concepts.
28	Rena Maiburni Yanti, Mansurdin Mansurdin (2023)	The project approach increases learning participation and responsibility.
29	Nicken Hafizah, Zuardi Zuardi (2023)	Digital media increases student interest and participation.
30	Muhamad Ardonansyah, Bayu Hardiyono, Arif Hidayat (2021)	Interactive multimedia fosters students' intrinsic motivation.
31	Luthfi Rahmawati, Nanda Saputri (2022)	Students are more active in discovering concepts through experimentation.
32	Nurul Khasanah, Dwi Puspita (2024)	Quizizz boosts students' enthusiasm and competitive spirit.
33	Diah Ayu Lestari, Nofi Kurnia (2021)	Digital modules strengthen the science literacy of elementary school students.
34	Fajar Rukmana, M. Asnawi (2023)	Interactive simulations deepen national values.
35	Rini Setiawati, Budi Raharjo (2022)	PBL Interactive strengthens collaboration between students.
36	Arum Lestari, Hendrik S. (2021)	Interactive PowerPoint effectively spurs students' attention.
37	Rika Andini, Sari Nurjanah (2023)	Google Interactive Forms improves student reflection and activeness.
38	Laila Suryani, Andi Mulyadi (2024)	Wow! Increase students' motivation and competitive spirit.
39	Dewi Anggraeni, Taufik Rahman (2022)	Animated videos clarify concepts and increase interest in learning.
40	Evi Purnamasari, Agung Santoso (2023)	Interactive technology encourages two-way student-teacher communication.
41	Fani Nuraini, Lia Rahayu (2021)	Interactive e-books encourage independent learning and an interest in reading.
42	Winda Kurniawati, Dedi Prasetyo (2024)	Interactive online conferencing encourages social collaboration.
43	Rafiqah Lestari, Annisa Rahmadani (2022)	Scratch trains logical and creative thinking.
44	Dedy Wirawan, Anita Lestari (2023)	The Interactive Learning Cycle improves conceptual understanding.
45	Alvian Rizki, Tika Handayani (2020)	Android apps increase student activeness and independence.
46	M. Rizqia Putri, Andi Kusuma (2024)	Interaction prompts on the LMS (direct feedback) increase student participation and Q&A frequency.
47	Shirley O'Neill (2024)	Interactive podcasts with short quizzes increase material retention and interest in listening to learning.
48	Nur Aulia, R. Sigit (2023)	Virtual simulations increase students' understanding of experimental concepts and students' courage to conduct independent experiments.
49	Putu Wulandari, Eka Saputra (2022)	Thematic learning coupled with mobile activities improves group engagement and project outcomes.
50	Lestari Melina, Yudi Pranoto (2024)	Adaptive systems provide personalized learning paths so that weak students show increased achievement.
51	Indra Mahendra, Kartika Sari (2023)	The Smartboard supports dynamic visualization and encourages active responses from most students.
52	Novita Rahma, S. Hadi (2024)	Gamification elements (badges, levels) increase intrinsic motivation and short-term activeness.
53	Fajar Nugroho, Rina Malik (2023)	Peer instruction fosters conceptual discussion and the ability to re-explain by students.
54	Ayu Kartikasari, Dwi Santoso (2022)	AR helps with abstract visualization so that the concept comprehension score increases significantly.

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55	Hendra Wijaya, Mira Lestari (2024)	Interactive microlearning (short duration + activity) increases retention and interest in learning.
56	R. Putri Anggraini, Agus Setiawan (2023)	Structured synchronous discussions improve verbal participation and collaboration during online learning.
57	Yohana S., B. Kurniawan (2021)	Interactive storytelling improves children's listening and retelling skills.
58	S. Rahmawati, T. Irawan (2024)	Adaptive quizzes help students identify weaknesses and better plan for self-paced learning.
59	Dedi Kurnia, Lila Hanifa (2023)	Real-time formative feedback makes students reflect instantly so that improvement is faster.
60	Melina Ardiansyah, R. Handayani (2022)	The use of educational groups on managed social media enhances parent-student discussions and supports learning at home.
61	Aditya Pramana, Lia Oktaviani (2024)	The use of VR makes students more enthusiastic and active in exploring the digital learning environment.
62	Dwi Yuliana, Ahmad Fauzi (2023)	Project-based learning with interactive discussions enhances students' sense of responsibility and participation.
63	Rina Puspitasari, Bagus Nugraha (2022)	The use of Quizizz strengthens student active engagement and accelerates teacher feedback.
64	H. Susanto, N. Farida (2024)	Chatbots help students ask self-paced questions and encourage more frequent interactions outside of face-to-face hours.
65	T. N. Lestari, R. Prabowo (2023)	Interactive videos with integrated quizzes foster students' focus, motivation to learn, and activeness during the learning process.

A summary of the main findings of each of the articles analyzed is presented in Table 1. The table contains information about the author and the main findings of the research related to the form of interactive learning innovation and its impact on student learning activity. The presentation of this table aims to provide a comprehensive overview of the variety of innovations applied and the consistency of research results that show an increase in student learning activity. The results of bibliometric mapping using VOSviewer software showed that the most dominant keywords in the study of interactive learning innovations included "learning", "teacher", "learning model", and "teacher".

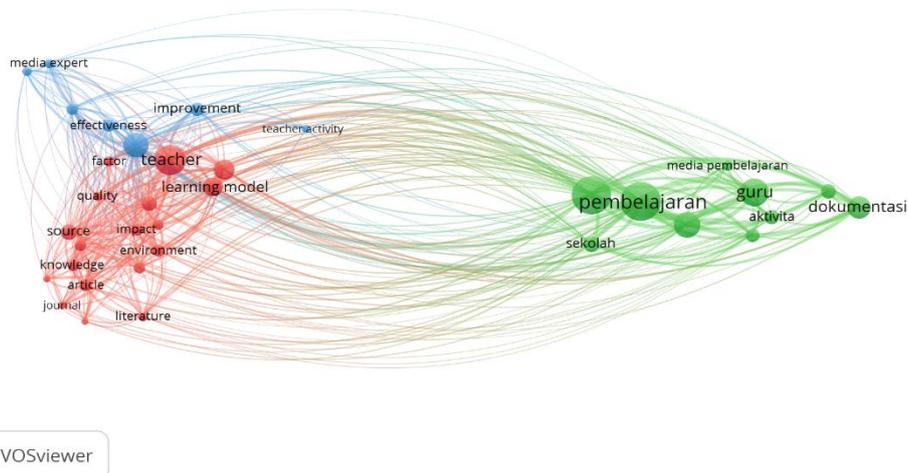


Figure 2. Visualization of Interactive Learning Innovations, Learning Activities with VOSviewer

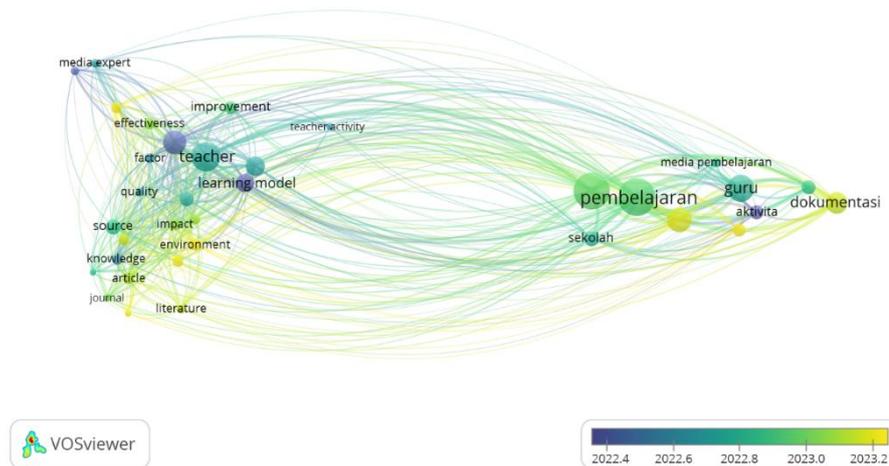


Figure 3. Visualization with VOSviewer

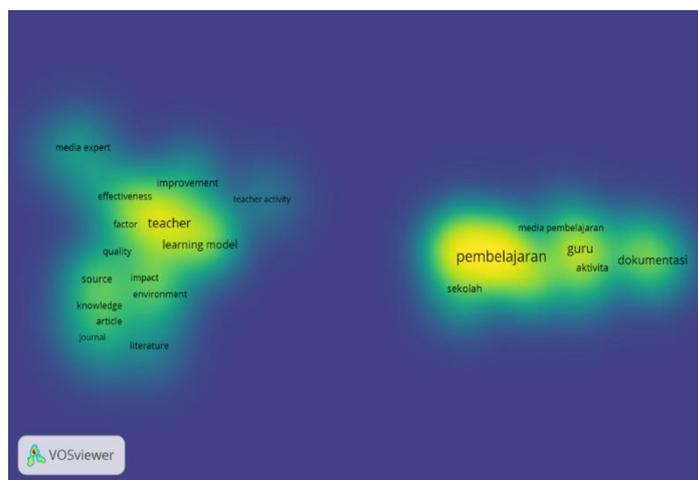


Figure 4. Visualization of Interactive Learning Innovations with VOSviewer

Visualization of the relationship between keywords and research clusters is presented in Figure 2, Figure 3, and Figure 4, which describe the research focus on the role of teachers, the use of learning media, and interactive learning models in increasing student learning activity. This mapping shows a strong relationship between learning innovation, the role of teachers, and the development of participatory learning activities.

CONCLUSION

Based on the results of a systematic review of 65 articles analyzed, it can be concluded that interactive learning innovations play a significant role in increasing the learning activity of elementary school students in cognitive, affective, and psychomotor aspects. The majority of studies (around 78%) show that the application of technology-based approaches such as Project Based Learning (PjBL), Problem Based Learning (PBL), gamification, blended learning, and interactive digital media are able to encourage students to be more active in discussing, dare to express opinions, collaborate, and show higher motivation to learn. This proves that interactive learning not only functions as a supporting medium, but also as the main driver of the transformation of the learning process towards a student-centered paradigm. The application of digital technology such as learning management systems (LMS), augmented reality (AR), interactive videos, quiz applications, and collaborative platforms has proven to be able to provide a more interesting, responsive, and relevant learning experience with the times. Learning designed with quick feedback mechanisms, exploratory activities, and structured challenges encourages students to be more actively involved in each learning process. In addition, teachers appear as the key to the success of the

implementation of interactive learning innovations through their roles as facilitators, mediators, and designers of learning that are creative and adaptive to the development of educational technology. However, this study also confirms that the implementation of interactive learning still faces a number of obstacles that need special attention. The main obstacles found include limited technological infrastructure, uneven internet access, teachers' digital literacy that still varies, and the readiness of schools in providing digital learning support facilities. Other factors such as the mindset of teachers who still tend to maintain conventional methods are also challenges in the implementation of learning innovations. Therefore, strengthening the capacity of educators through continuous digital training, education policy support, and the development of technological infrastructure facilities is an urgent need to support the success of interactive learning in the future. Overall, the results of this study confirm that interactive learning innovation is an effective strategy in increasing student learning activity and building 21st century skills, such as creativity, collaboration, communication, and critical thinking. With the right policy support, improved teacher competence, and equitable distribution of technology facilities, interactive learning has the potential to become the main foundation in building a more participatory, inclusive, adaptive, and technology-based education ecosystem in the digital era

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