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Teacher Views on the Advantages and Challenges of Implementing Game-Based Learning Methods: A Systematic Literature Review

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Abstract

An educator or teacher plays a very important role as the 21st Century Education Implementation Agent in ensuring that student-centered active learning can be created in a fun way. Therefore, a systematic literature study was conducted to examine teachers' views on the implementation of game-based learning methods from 2019 to 2024. This study uses the systematic review methodology of PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analyses). After going through the analysis and synthesis process, a total of 10 articles meet the acceptance criteria for this study. Selected articles are derived from databases such as ProQuest, WOS, Scopus, and ResearchGate, which facilitates access to topics relevant to the study. The methods used in these studies include quantitative, qualitative, and mixed methods. The results show that three articles use quantitative methods through action research and questionnaire forms. An article uses qualitative methods, through interviews or interviews. Six other articles use mixed methods, combining quantitative and qualitative elements such as library research, literature reviews, and comparative studies.

Keywords: Game-Based Learning, Pedagogical Competence, Instructional Strategies, Fun Learning

Introduction

Wong Weng and Kamisah (2018) state that there is no clear or specific definition of game-based learning concepts. They classify game-based learning into two categories, non-digital games and digital games. Non-digital games are games that do not require the use of computers or electronic devices, including analog and traditional games. On the other hand, digital games use computers or mobile devices, and are often applications or video games. The game should be an important element of an entertaining educational approach. Melvina Chung and Norazah (2021) argue that game-based learning encourages active learning, making students more independent and productive. The integration of learning with the element of the game not only changes students' perceptions of learning but also increases their interest in teaching and learning activities. According to Yu Chu & Yu Shan (2023), this method will attract students and develop their creativity throughout the learning process.

Armadi and Wan Muna Ruzzana (2021) emphasize that teachers who use game-based learning (GBL) methods can attract and enhance student achievement in Malay language teaching and learning. More interestingly, the GBL has the potential to improve language proficiency and student literacy development, making it a very effective tool in the context of education.

Literature Review

Game-Based Learning (GBL) is becoming more focused on education as a strategy to enhance student engagement in line with learning outcomes. The study of Charles et al., (2010) shows that combining elements of the game in educational technology can increase engagement, performance and student number of students. Charles et al., (2010) described that the PBP was successfully implemented at various levels of education. This study was supported by Aktekin et al., (2018) who stated that all levels of institutions can begin to introduce GBL integrated in traditional and modern lectures. This has been proven when Aktekin et al., (2018) shows that there is a student learning, motivation, and engagement performance. Ye et al., (2018) described the use of commercial video games in the flipped classroom has a positive impact on learning outcomes, especially in physics and biology. The GBL strategy, which combines game-based activities before class with discussion and training in the classroom, is found to improve learning efficiency.

Advantages of Use of Game-Based Learning Methods to Teachers

Curriculum Standard Documents and Assessment Review 2016 states that learning strategies through play are a structured and planned approach to give students the opportunity to learn in a free, safe, fun, and meaningful environment. This statement emphasizes student-centered curriculum through various activities that engage them during the learning session. Morrison (2011) also agrees that playing activities are important as it helps students build knowledge. Thus, based on the resources obtained, teachers have actually gained many benefits when using the GBL

Promote Critical Thinking and Problem Solving among Students

Almon (2004) describes the game as important and children are not machines to be blocked from play. In this context, well-designed games can help students develop critical thinking skills, problem solving and facilitating teachers to teach complex concepts through more practical and relevant situations.

Increase Technological Knowledge among Teachers

The use of digital games in teaching helps teachers to improve their technological skills. Bodrova & Leong (2010) argues that in the face of an environment that requires students to focus on academic skills, the GBL approach is actually an easy step for teachers and students to increase technological mastery for the purpose of improving their own academic skills. This is because the integration of the GBL is also an unknowingly technique that can be considered to develop students to focus on the learning process.

Reduce Stress and Build a Positive Atmosphere

The GBL helps create a more relaxed and positive learning environment, which can reduce stress for teachers and students. Miller & Almon (2009) argues that stress is one of the reasons why teachers are not able to think of alternative steps to better revive the learning

environment. Therefore, the playing nature should not be ignored in the context to integrate and create a positive atmosphere in the learning and teaching process.

Platforms for Teachers to Enhance Creativity and Innovation in Teaching

The GBL provides teachers with the opportunity to plan and implement more creative and innovative teaching activities, making teaching more dynamic and effective. For example, during the process of creating kahoot, quizzes and other applications teachers can practice their creativity in the process of preparing stimulus materials as a teaching aid. According to the "Zone Market Research 2023" report, it has shown that game-based learning has a 10.9 billion USD market by 2022 and is expected to increase to 52.8 billion USD, explaining the huge potential and increasing interest in this method that will produce more creative and innovative teachers.

Methods to Increase Student Active Engagement

Through the GBL, students are more likely to be actively involved in the learning process, which makes it easier for teachers to achieve their learning objectives. Yu Chu and Yu Shan (2023) argue that the game-based learning methods encourage active learning that make them self-reliant and more productive during the learning process. This is because learning integration and play can increase the focus of the process of processing knowledge.

Challenges in the Implementation of Game-Based Learning Methods

The GBL is still a challenge among teachers because of its most common factors in the design and implementation planning phase. When a design is produced, its effectiveness sometimes does not produce positive feedback and takes time for improvement. Awareness of the benefits and the importance of it is also often overlooked in the generation that is considered technological blind. The next discussion is on the issue of challenges that are still a boundary for teachers to implement the GBL method in the process of delivery of knowledge.

Constraints in Terms of Existing Curriculum Management

Curriculum that is too compact or tightly structured may not provide room for game-based teaching. Teachers need to make sure they meet all the curriculum requirements while using the GBL which causes the implementation process to be delayed. Romero & Kalmourtzis (2020) described the coordination of game design with learning outcomes should be in accordance with curriculum standards. The GBL implemented sometimes fails to convey the learning objectives and is considered a futile effort.

Difficulty in the Assessment Phase

Evaluating the effectiveness of learning through games can be difficult as teachers may face challenges in planning objective and accurate assessments to measure student progress and achievement. Romero & Kalmourtzis (2020) explain this because teachers should ensure that the game integrated in the classroom is in line with the learning goals before assessing. The assessment rubric should also be based on the understanding and mastery of students who are considered abstract when done in digital form.

Solve Issues Diversity of Student Skills Levels

Students in one class may have different levels of skills and knowledge. Providing a suitable game for all students, without leaving anyone behind, can be a challenge. Rüth et al., (2022)

explains that some teachers may lack the skills and knowledge needed to integrate digital games with effective into their teaching. When there is a difference in skills in one learning session, teachers need to act to resolve the issue first.

Time Constraints

Planning, expanding and implementing educational games takes a lot of time. Teachers are often tied to a tight schedule and may find it difficult to find time to organize GBL. Rüth et al. (2022) argues that this challenge will prevent them from choosing the right game, integrating the game into the curriculum, and helping students use the GBL effectively.

Facility Constraints

Marques & Pombo (2021) illustrates that the integration of digital technology with game-based learning may be impressed by obsolete devices and poor internet connections in schools, which will limit teachers' ability to implement game-based learning effectively.

Methodology of the Study

This study uses a systematic survey method to gather teachers' views on the advantages and challenges of implementing the GBL. This approach is supported by Gough et al. (2017), which acknowledges the advantages of systematic survey methods as scientifically proven methodology and widely used in study data collection. This methodology meets the criteria needed to answer the research questions. Therefore, this study follows the Guidelines for Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISM) as recommended by Moher et al. (2009) and explained in Figure 1.

Acceptance Criteria

All articles selected and accepted meet the characteristics needed for this study, considering teachers' views on game-based learning published in the peer-reviewed journal. Each study involves teachers and lecturers of the Faculty of Education who are still serving as samples. This study also takes into account the method of discussion and comparison of library research and literature review. The selected article was published in the latest six years, from 2019 to 2024. The article was written in English or Malay. In addition, each selected article is fully accessible, explains the research method, and has complete information about the findings that discuss the teacher's views on the GBL in terms of advantages and challenges.

Rejection Criteria

The rejected articles are beyond the scope of the study, the constraints to be fully accessible, involving inaccurate study samples or having a title that does not match this study. All articles published before 2019 are also not analyzed as research documents.

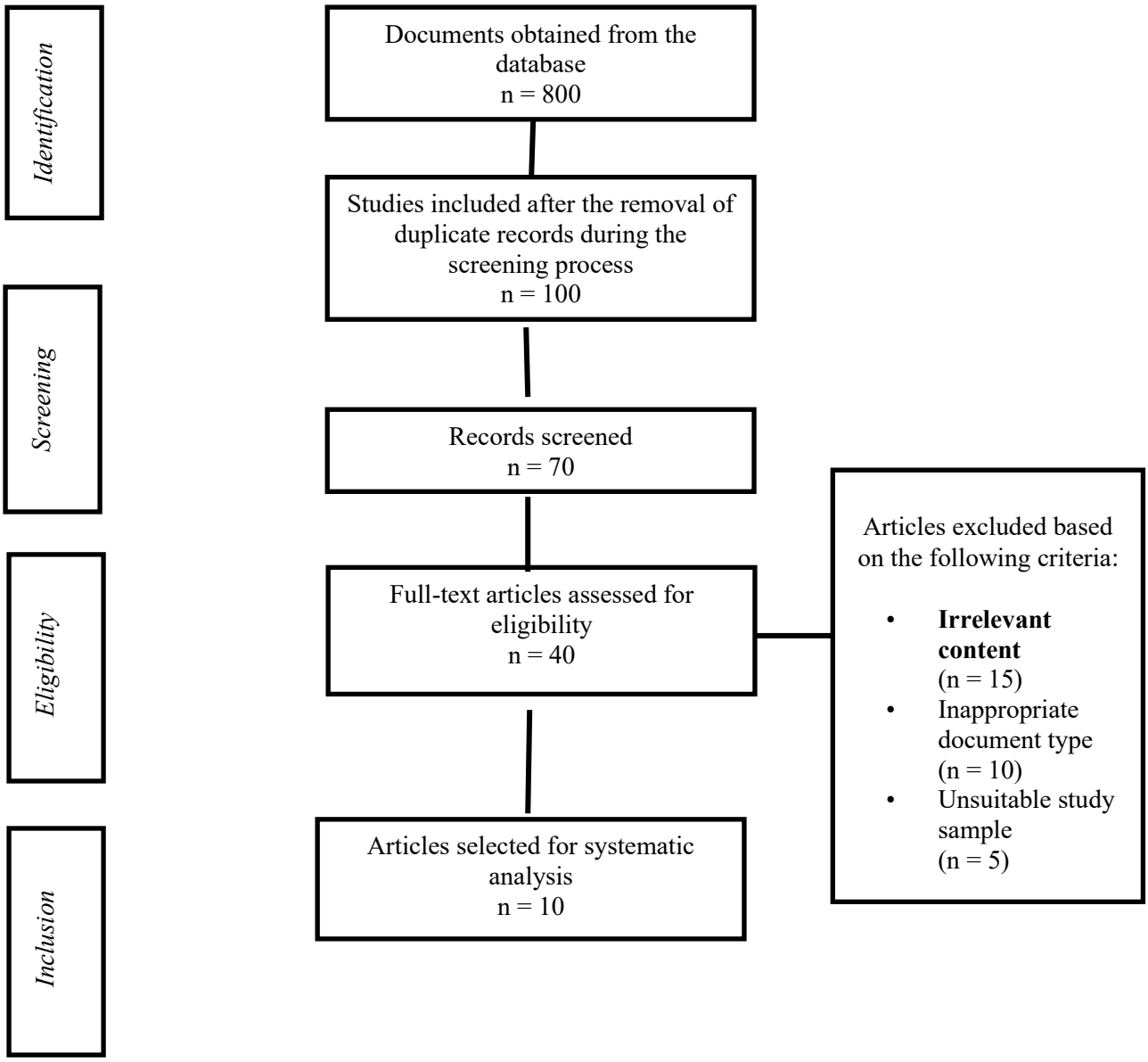

Figure 1: Article Selection Procedure
Source: Adapted from the PRISMA Flow Diagram (Moher et al., 2009)

Search Strategy

The search was initiated using databases such as ProQuest, Web of Science (WoS), Scopus, and ResearchGate to facilitate access to studies focused on the research topic. The search process involved scheduling and organizing keywords used during the search phase. The keywords were based on several references, including definitions, viewpoints, perspectives, and game-based learning methods. All terms used were confirmed to be relevant to teachers. Both singular and combined terms were employed in this systematic search. Among the final keywords used were:

"teacher" OR "educator" OR "practitioner" AND "perception" OR "perspective" AND "game-based learning" OR "educational game".

Selection of Eligible Articles

Referring to the predefined keywords, an initial total of 800 articles were identified. After the process of removing duplicates and overlapping articles, only 100 relevant articles remained based on the screening of titles and abstracts. From this remaining pool, the researcher further analyzed 70 articles that were relevant, focused, and met the inclusion criteria. However, some articles were excluded due to reasons such as content, document type, and study sample. Ultimately, 40 articles met the appropriate criteria. After a more detailed and thorough eligibility assessment, 10 articles were selected for analysis in accordance with the study's objectives.

Study Findings

Based on the four phases outlined in Figure 1, a total of 10 articles were selected for analysis, all of which met the predefined inclusion and exclusion criteria. The elements discussed include the distribution of article publications by year, study location, study samples, research design, and teachers' perspectives on the use of game-based learning (GBL), focusing on its advantages and challenges.

Distribution of Articles and Publication Years

Figure 2 illustrates the number of studies related to game-based learning (GBL) published annually within the timeframe of this study, which spans from 2019 to 2024.

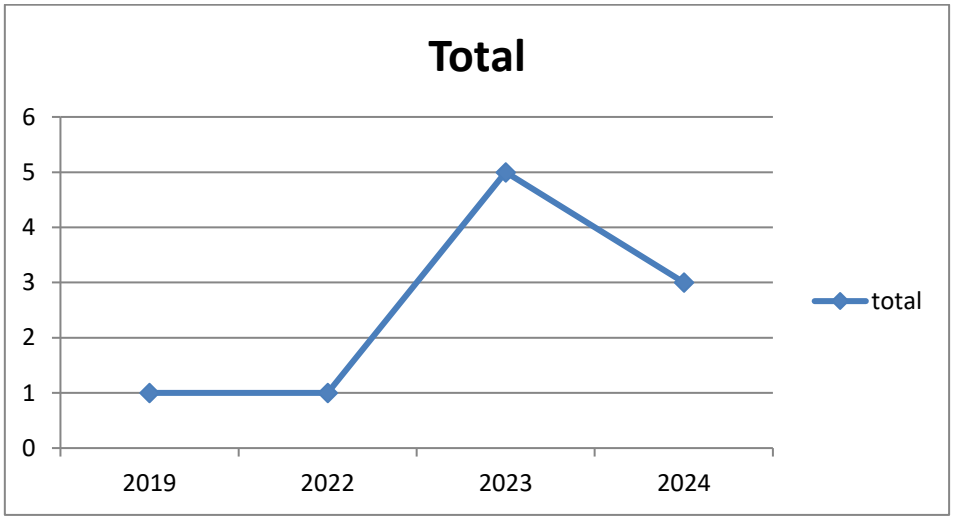

Figure 2: Distribution of Articles and Publication Years

Referring to the publication years of the selected articles, there was no noticeable increase from 2019 to 2022, with only one relevant article published during that period. However, a significant increase was observed from 2022 to 2023. The year 2023 was the most productive year concerning the theme of game-based learning (GBL), with five articles matching the thematic criteria published. Nevertheless, there was a slight decline in early 2024, with only three articles published.

Study Locations

The articles included in this study cover various countries such as Malaysia and Indonesia in Asia, as well as Greece, Ghana, and Nigeria. According to a report by BrandEssence Market Research (April 2023) on the game-based learning market, there is a high demand from

countries in the Asia-Pacific region. Additionally, educational institutions in developed countries have also placed special emphasis on game-based learning and are actively working to enhance the use of digital technology in education from the primary level through to higher education. Based on this report, game-based learning (GBL) is an important initiative that offers significant opportunities in the field of education to cultivate a generation of creative and innovative teachers, which will subsequently benefit all students.

Study Sample

This study focuses on a sample comprising educators, including trainee teachers, in-service teachers, and lecturers from institutions of higher education, in order to obtain their perspectives on two key elements: the advantages and challenges of implementing Game-based learning (GBL). In addition, the study incorporates discussions and comparisons through library research methods and literature reviews. Following the analysis of the sample, a summary of data was generated to represent the ten selected articles.

Four studies involved samples of teachers from primary and secondary schools. One study focused on lecturers from a faculty of education, two were based on literature reviews, and three employed focused research methods. Table 1 presents the list of samples involved, as derived from the articles.

Table 1
Study Sample

No.	Scholar	Study Sample Description
1.	Zaharah Kamaruddin (2019)	3 preschool teachers
2.	Dodi Erwin Prasetyo (2022)	Library research
3.	Ahmad Afandi Yusri (2023)	Focused article
4.	Georgios Lampropoulos (2023)	158 primary and secondary school teachers
5.	Ima Kusumawati Hidayat et al. (2023)	Library research
6.	Hayatul Muna et al. (2023)	5 lecturers from the Faculty of Education
7.	Prince Kelvin Owusu (2023)	65 rural school teachers
8.	Victoria Olubola Adeyele (2024)	Primary and secondary school Science teachers
9.	Ahmad Afandi Yusri et al. (2024)	Literature review
10.	Ani Atanasova (2024)	3 teachers from different classes

Research Design

Table 2 presents the analysis based on the methods and instruments used in each selected article. The researcher found that the methodologies employed include quantitative, qualitative, and mixed methods. Based on the distribution of the analysis, three articles employed quantitative methods, specifically action research and questionnaire surveys. One article used a qualitative method involving interviews. The remaining six articles adopted a mixed-methods approach, combining qualitative and quantitative techniques such as library research, literature reviews, and comparative studies.

Table 2
Analysis by Research Design

No.	Scholar	Methodology	Instrument
1.	Zaharah Kamaruddin (2019)	Quantitative	Action research
2.	Dodi Erwin Prasetyo (2022)	Mixed methods	Library research
3.	Ahmad Afandi Yusri (2023)	Mixed methods	Focused article
4.	Georgios Lampropoulos (2023)	Quantitative	Questionnaire
5.	Ima Kusumawati Hidayat et al. (2023)	Mixed methods	Literature review
6.	Hayatul Muna et al. (2023)	Qualitative	Survey & interview
7.	Prince Kelvin Owusu (2023)	Quantitative	Questionnaire
8.	Victoria Olubola Adeyele (2024)	Mixed methods	Comparative study
9.	Ahmad Afandi Yusri et al. (2024)	Mixed methods	Comparative study
10.	Ani Atanasova (2024)	Mixed methods	Comparative study

Teachers' Perspectives on the Implementation of Game-Based Learning
Table 3 presents teachers' perspectives on the use of game-based learning (GBL), based on two main themes: the advantages and the challenges during its implementation. The findings from the analysis are summarised in the table.

Table 3
Teachers' Perspectives on Game-Based Learning by Theme

No.	Scholar	Advantages	Challenges
1.	Zaharah Kamaruddin (2019)	√	
2.	Dodi Erwin Prasetyo (2022)	√	
3.	Ahmad Afandi Yusri (2023)	√	
4.	Georgios Lampropoulos (2023)	√	
5.	Ima Kusumawati Hidayat et al. (2023)	√	
6.	Hayatul Muna et al. (2023)	√	
7.	Prince Kelvin Owusu (2023)		√
8.	Victoria Olubola Adeyele (2024)		√
9.	Ahmad Afandi Yusri et al. (2024)		√
10.	Ani Atanasova (2024)		√

Discussion
Teachers' perspectives on game-based learning (GBL) are discussed based on two main themes: advantages and challenges.

Advantages
The selected articles discuss the advantages of game-based learning (GBL), with a specific focus on teachers' perspectives. Teachers' views on the use of GBL in the teaching and learning process are essential for continuous improvement. Through the analysis conducted, six selected articles agree that GBL facilitates the teaching and learning process. In addition, the articles highlight the increased motivation among students during GBL activities in the classroom.

Zaharah Kamaruddin (2019) stated that GBL can enhance letter recognition skills among preschool students, thereby reducing the burden on teachers in reinforcing students' skills. Dodi Erwin Prasetyo (2023) observed an improvement in teachers' skills, which he classified as pedagogical skills, during the implementation of GBL.

According to Ahmad Afandi Yusri (2023), teachers became more enthusiastic about continuing learning activities and responded positively to the implementation of GBL. Georgios (2023) explained that the training teachers undergo enhances their competency in applying GBL in the classroom. Ima Kusumawati Hidayat et al. (2023) noted that when teachers act as facilitators during GBL sessions, they expose students to higher-order thinking patterns while simultaneously improving their own ability to think creatively in line with the evolving nature of GBL techniques.

Hayatul Muna et al. (2023) also agreed that there are advantages for teachers who implement GBL, such as using tools like Kahoot, which help teachers save time in online assessments compared to conventional methods.

Challenges

Four of the selected articles focused on the challenges in implementing game-based learning (GBL), and these challenges were often discussed alongside proposed solutions based on the respective studies or researchers' viewpoints. Prince Kelvin Owusu (2023) identified training and infrastructure as major challenges faced by teachers in implementing GBL. He suggested that governments should take these challenges seriously to reduce the digital divide, especially in the context of GBL, which is already widely practised in many countries.

Victoria Olubola Adeyele (2024) explained that her comparative study revealed significant differences in student achievement during GBL implementation, depending on the teacher's level of skill. She concluded that one of the primary challenges is the variation in teachers' competencies, which must be addressed through adequate training before they implement GBL in classrooms.

Ahmad Afandi Yusri et al. (2024) highlighted time constraints as a challenge, noting that teachers often face difficulties in preparing for GBL due to excessive administrative duties, particularly data entry tasks, which are time-consuming and viewed as non-instructional. He recommended reducing such non-teaching workloads to allow teachers more time for lesson preparation.

Ani Atanasova (2024) argued that teachers also need strong psychological skills to manage the emotions of students who receive low grades during GBL sessions. This is especially relevant when digital GBL tools publicly display class-wide results, which can become a source of stress for lower-achieving students.

Conclusion

This systematic review examined and analysed teachers' perspectives on the implementation of game-based learning (GBL) in teaching. Ten articles were selected and analysed based on two main themes: advantages and challenges. The findings indicate that teachers generally hold positive views toward GBL, acknowledging its benefits in helping them achieve their instructional goals.

However, several challenges must be addressed, including the need to enhance teachers' skills, time constraints, the provision of a conducive learning environment, adequate facilities,

and ongoing training. GBL holds great potential, especially through the use of digital games, which can motivate teachers to adopt more engaging teaching methods.

It is hoped that teachers can collaborate with experts in game development to create more engaging and effective teaching materials. By integrating GBL into instruction, teachers can foster innovation in education and create a more stimulating learning environment, ultimately improving students' academic achievement and personal development.

Theoretical and Contextual Contributions

This study offers both theoretical and contextual contributions to the field of education, particularly in the implementation of Game-Based Learning (GBL) methods. Theoretically, the findings reinforce existing understandings of GBL frameworks by linking the pedagogical benefits of GBL with teachers lived experiences as frontline practitioners. It addresses a gap in the literature by foregrounding teacher perspectives within the Malaysian educational context - an area that remains underrepresented in global discourse. Contextually, this study highlights practical challenges faced by educators, including insufficient training, limited access to digital resources, and alignment issues with curriculum standards. These insights provide evidence-based implications for policymakers, teacher training institutions, and future researchers seeking to design more targeted and sustainable strategies for the effective integration of GBL in schools.

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