

Study of the Effect of Booklet Website Assisted-Game-Based Learning on Students' Motivation and Learning Outcomes in Biology Learning

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Abstract

The significance of this study is to investigate the efficiency of the Blooket platform in acting as a game-based learning tool in enhancing the motivation and outcomes of students learning biology. The approach adopted for this study is a literature approach involving the exploration of various articles and findings related to the topic. From the analysis above, it is evident that the platform has vital attributes of a game-based platform. The attributes include an interactive platform design that has proven effective in boosting student engagement and motivation and increasing student understanding. The findings of various researches indicate a significant improvement in students' motivation and active engagement and improvement in students' understanding and achieving mastery levels in understanding biological concepts. The platform is also valid and effective as a means of evaluation and concept reinforcement. It should be noted that for successful implementation of the platform within the school curriculum, valid educational policies and teacher capacity as well as sufficient technological resources are fundamental. The use of the Blooket learning platform has proved to offer a significant and more interactive and effective means of student learning.

Keywords: Blooket, Game-based learning, Learning motivation, Learning outcomes, Biology.

INTRODUCTION

The education system in Indonesia keeps changing to accommodate the era and the needs of the students too. One of the major changes in the education sector is the use of the Independent Curriculum, which has been embraced across all levels, from senior high schools too, and its key emphasis is on student outcomes, creativity, independence, and character building via projects and discipline integration. The term science comes from the Latin word *scientia*, which means knowledge. In a narrow sense, science is a discipline consisting of physical sciences and life sciences (biology). Conant defines science as a series of concepts and conceptual schemes that are interrelated, and grow as a result of experimentation and observation, and are useful for further observation and experimentation. Carin & Sund (1996) define science as a system for understanding the universe through

observation and controlled experiments. According to Conant (1950), science is a series of concepts and conceptual schemes that are interrelated, and which grow as a result of experimentation and observation, and are useful for observation and experimentation.

Practical work is a learning experience in which students interact with materials or secondary data sources to observe and understand the natural world presented through experiments. Through practical work, teachers can provide students with scientific method training by following existing guidelines (Abrahams & Millar, 2008).

In the era of independent curriculum, teachers are required to design flexible learning while still referring to national standards. This article explores the actual practice of biology practicums in schools, particularly in terms of curriculum suitability, facility limitations, and the role of digital media as a supporting medium. In biology learning, one of the activities that applies the scientific method is by conducting practical activities (Wilke & Straits, 2005). Through optimal practical activities, it is hoped that learning objectives can be achieved properly (Alonso, et al., 2008).

DISCUSSION

On the basis of analysis carried out in several articles, it has been seen that the Blooket website has a list of important features which facilitate interactive learning. First, learning through game-based quiz formats has been shown to have a positive impact on students' learning. This is because activities like competitions, sorting options of games, scores, and ranks make them more enthusiastic and active, and display increased learning results after completion of learning. For example, in relation to learning in Indonesian language, a significant result was observed in increased scores, motivation, and interactivity of learners in the learning process. This highlights that a more effective learning process is created through web-based educational games (Krisnawati & Prabowo, 2025).

Additionally, as stated by Johni et al. (2024), from research findings involving the development of digital quizzes, it can be seen that media from Blooket has high validity (0.82), very high practicality (0.90), and high effectiveness (0.85). This particular platform can be referred to as practical due to its scalability and ease of use. Additionally, from the aspect of media development, the evaluation media created through quizzes considers features such as appearance, language, and content appropriateness with regard to objectives for effective evaluation media that can be referred to as interesting and effective media.

In a study conducted by Palupi and Suaedi (2025), it was found that game-based learning resulted in actual changes in students' ways of learning. The students who were previously shy and passive started to show enthusiasm and confidence in speaking as they

actively participated in the activities. In fact, the level of enthusiasm rose greatly to 85% compared to just 40% at the beginning of the session. The students found that when the lessons were conducted using a game approach, they found themselves more interested and not easily bored. They found it easier to apprehend the lessons. Their work quality improved as they correctly picked out features of a story and were more creative to the extent that they started to feel more assured of themselves when presenting their work. The study proved that not only will a game-based approach enliven the atmosphere of a classroom; it will also be beneficial for students to improve their understanding and way of thinking.

Based on the analysis by Jumanto & Sofyan (2021), learning media with game elements has been proven to make an impact on students. Most students feel it is easier to understand the material because its quiz format is designed like a game, which makes the learning activity interesting and less boring. The points and ranking system also encourage students in learning so that they can be more enthusiastic and active. This can be seen from the increase in completeness of learning, which reached 80-89% in two meetings. Student responses also tend to be good because they feel challenged and motivated when learning using gamified media. Moreover, research conducted by Pratiwi et al. (2025) mentions that game media, such as Blooket, was able to make students more enthusiastic, engaged, and improve the attainment of learning outcomes in the learning process. Based on these research results, the learning process was conducted by implementing certain steps, including planning and implementation.

The findings of the research prove that the employment of Blooket as a gamification medium for learning has a significant effect on increasing students' motivation, understanding, and engagement in the learning activities. The findings are in accordance with the study conducted by Krisnawati & Prabowo (2025), which indicate that the implementation of educational games in a learning activity has a positive impact that generates a good and healthy competitive environment for students to be more active and engaged and to face challenges in dealing with problems. Factors related to ranking and points as a gamification element and type of gameplay have actually proven to generate additional stimuli for students to be motivated to take part in the learning activity. Thus, it is clear that the design of the gamification medium for learning has significant impacts on increasing the good quality of students' engagement in the learning activity.

Besides the enhancement of motivation and understanding, the effectiveness of Blooket is also clear in the adaptability of the system for any learning requirement. A study conducted by Johni et al., in 2024 validated the extent to which Blooket is not only a system of high usability, but is indeed valid, viable, and effective according to the result acquired in the

process of the development test. This indicates that the guidelines used in Blooket, such as suitability, format, and term clarity, are indeed efficient in fulfilling the academic requirements for the development of a learning medium. The high effectiveness factor acquired in Blooket with a score of 0.85 emphasizes the important contribution made in improving the result of students' understanding, particularly as the medium in evaluation/reinforcement applications. The adaptability features possessed in Blooket, as mentioned, are among the most important reasons why the system is relevant in the modern days of digital schooling.

From a learning design perspective, the main principles that appear in the development of Blooket-based media include the principles of validity, practicality, and effectiveness. In the ADDIE development model, gamified quiz designs must meet the criteria of clarity of objectives, suitability of questions to basic competencies, and visually appealing presentation. The validity test results show that the media structure, language, and content have met validity standards; the practicality test shows that the media is easy to use by both teachers and students; while the effectiveness test shows that the use of Blooket significantly improves learning outcomes. In its implementation, the design principles also emphasize accessibility (can be used on any device), adaptability (teachers can adjust the level, type of game, and appearance), and engagement based on positive competition that provides space for students to learn more actively. Therefore, the characteristics and design principles of Blooket have proven to be capable of delivering enjoyable, meaningful learning that is in line with the demands of 21st-century education.

From the above analysis results, related to Blooket as a form of Game-Based Learning, this platform works with mechanisms corresponding to several research findings regarding effectiveness in learning through game-based means. Features such as scores, leaderboards, and power-ups provide a competitive yet fun learning experience. These elements encourage students to be more active because they want higher scores or a better position on the leaderboard. This situation often motivates students who are usually passive to try answering questions, to become more focused during activities, and feel challenged to solve the problems correctly. The interaction happening during the game-both between students and between the students and the material-can create a learning atmosphere that is not rigid, so that students can enjoy the learning process and not feel burdened.

Apart from the feature of being able to play a game while using the application, Blooket provides a retrieval practice opportunity for students that has a crucial role in consolidating their conceptual understanding. The questions asked in a fun way over and over again will

help students remember them more easily while being able to link these concepts to the situations they are faced with while playing. The use of both entertainment and retrieval practice has a great learning potential for motivating and achieving a greater outcome due to the meaningful learning process experienced by the students. The use of Blooket as a GBL application has a great learning potential due to its effectiveness in achieving a better learning experience for the students.

In a study conducted by (Pratiwi et al., 2025), learning was carried out by applying certain steps, namely starting the activity by using Blooket as a learning medium, then directing students to observe the display and observe the game and follow the instructions given. During the learning process, students showed very positive responses and were seen to actively participate in answering the questions given through Blooket, although there were still some students who were hesitant in choosing answers. From the results of the study by Pratiwi et al., 2025, it can be concluded that the use of the Blooket platform in learning has been proven to increase student engagement and the percentage of learning completeness. Based on the research conducted by Fajar & Surawan (2025), there are several things that need to be considered to support learning using the Blooket platform, including “the need for education policies that support teacher capacity, access to technology training, and strengthening of better education governance so that learning is expected to be more interesting, enjoyable, and supports active student involvement in learning activities” in the classroom.

Based on research conducted by Nisa (2025), learning using Blooket has been proven to increase student motivation and activity in biology learning. Students find it easier to remember the taxonomic sequence and scientific names in classification material. The research shows that conventional approaches often make students uninterested and unmotivated, whereas using games on the Blooket website can make learning entertaining and make vocabulary acquisition fun and stimulating.

CONCLUSION

Based on the literature analysis conducted, this study concludes that the implementation of Blooket as a game-based learning tool has a positive impact on students' motivation and learning outcomes in biology subjects. The platform is able to enhance students' participation, enthusiasm, and ability to understand learning materials through competitive game elements, attractive visual design, and repetitive practice that strengthens concept retention.

This is then further proved by the findings and discussion that Blooket is not only relevant, user-friendly, but can also be effective in enhancing learning achievement, student

activity, and the quality of interaction during the learning process. The effectiveness of Blooket in boosting the improvement shown above is driven by gamification features such as scores, rankings, and various game modes that create enjoyable and challenging learning for students, thereby motivating them both intrinsically and extrinsically.

Consequently, the aim of the current research to investigate the effect of Blooket on the motivation and results of the learning of the subjects of the studies participating in the investigation can be clearly fulfilled: Blooket makes a great contribution to an interactive and engaging approach to the learning of biology that also favorably impacts the knowledge of the subject. In the future, the proper utilization of Blooket in classroom settings needs to be encouraged through educational policies and proper training.

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