



The Effect of Interactive Learning Media Assisted Deep Learning Approach on the Learning Outcomes of Grade VIII Metthayom Students at Ban Mapring School, Yaring, Pattani Province, Thailand

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Abstract: This study aims to evaluate the impact of the implementation of immersive learning strategies with the help of interactive learning resources on the academic performance of eighth-grade students of Metthayom at Ban Mapring School, Yaring, Pattani Province, Thailand. The method applied was a quasi-experimental design involving a control group and a treatment group. Data collection was carried out through a learning outcome test designed based on competency indicators, then analyzed using descriptive and inferential statistics. The findings of the study revealed that students in the treatment group who received immersive learning supported by interactive media showed significantly better learning outcomes compared to the control group. This indicates that the application of animation, visualization, and two-way communication in the learning process can increase active participation, conceptual understanding, and critical and reflective thinking skills among students. The discussion shows that the integration of immersive learning strategies with interactive learning resources can create a much more meaningful and efficient learning experience in helping students apply concepts more deeply. In conclusion, the use of immersive learning strategies accompanied by interactive learning resources has a positive and significant impact on improving student learning outcomes, so it is worth considering as an innovative alternative in the learning process.

Keywords: Deep learning; Interactive media; Learning outcomes; Pattani; Student activities metthayom

Introduction

In addition to subject knowledge, students today must also possess deep comprehension, critical thinking abilities, effective teamwork, and creativity. Instead of focusing solely on memorization, the Deep Learning learning approach stresses students' active engagement in fully comprehending the content. According to Syafi'i et al. (2025), Deep Learning emphasizes the significance of meaningful, thoughtful, and pleasurable learning experiences in this context. This is because it enables students to develop a deep understanding of the

concepts they are learning and apply them in real-world situations.

In the age of globalization and the fourth industrial revolution, the educational system must graduate students with the capacity for deep thought, problem-solving abilities, and proficiency in information and communication technology (Doyan et al., 2020; Muliyadi et al., 2023; Munandar et al., 2024). The immersive learning approach in education is a method that prioritizes a deep understanding of concepts, connecting new information with existing knowledge, and higher-order thinking skills that include reflection and

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application in real situations (Hasyim, 2025). This approach is not the same as traditional learning, which is more mechanistic and concentrates on only acquiring facts. According to recent studies, the use of immersive learning can promote active student participation in the learning process and enhance the caliber of student learning outcomes and processes.

Secondary biology education plays a significant role in helping students develop their scientific knowledge, particularly when it comes to the subject of cells, which make up the smallest portion of the structure and function of living things. Since the subject of cells is abstract and tiny, it is frequently challenging for pupils to comprehend when taught using conventional techniques that involve text and explanations. Students who struggle to grasp this idea may find it more difficult to develop their critical thinking abilities and gain a thorough comprehension of the subject matter. Students actively create biological information as part of the biology learning process (Sokib et al., 2025). Students' biological knowledge is better if students are able to construct their past knowledge with the new knowledge they receive (Rosita et al., 2024). Consequently, student participation that active greatly influences the success of biology learning (Sari et al., 2025). Learning biology can influence how one thinks and how they relate one topic to another. Students will learn how to work independently or in groups, be critical, creative, consistent, think logically, systematically, respect opinions, be honest, self-assured, and responsible, in addition to comprehending and mastering biological concepts (Fernandez et al., 2025). Media presence is important for biology education (Sitompul et al., 2024). Because media can be used as an intermediate to help explain ambiguous material during the learning process (Sitompul et al., 2024).

According to Azhura et al. (2024), the role of Learning Media in Educational Components to Enhance Students, learning media is a crucial component of teaching and learning activities because it serves as a conduit between teachers and students to deliver material content in a more effective and efficient manner (Azhura et al., 2024; Susilawati et al., 2023). According to Handayani et al. (2025), media can help bridge the gap between students' learning styles, clarify concepts that may be hard to grasp, and make learning more engaging, dynamic, and participatory recognizing the need for eighth-grade students to have access to efficient biology learning resources. Because information is delivered in a variety of ways, including visual, aural, and kinesthetic features, students can learn more deeply by selecting appropriate media (Liana et al., 2023; Wulandari et al., 2024). Studies reveal that educational media "Students' learning outcomes have suffered as a result of their inability to comprehend the content that

teachers deliver on whiteboards and on student worksheets (LKS). Since interactive learning materials can improve student learning results, they ought to be utilized more in the classroom, particularly in biology (Putri et al., 2021)

According to the interview's findings, Ms. Mutiara Yamu stated that biology teachers continue to use homemade media or have never used interactive media like games, picture media, or simply book media at school. As a result, the learning process in the classroom is less engaged and active, few students ask the teacher questions, and many students struggle with biology assignments, playing alone when doing assignment presentations few students are able to properly and concisely present the findings of biology assignments and draw the appropriate conclusions. Yamu Mutiara (2025). Based on the interview results, it can be concluded that the reason biology learning is difficult in class VIII Metthayom at Ban Mapring School is that the teacher's use of learning media is subpar, which makes the students disinterested in the process. This situation indicates that biology learning skills are still low among the students.

Few students are able to properly and concisely present the findings of biology assignments and draw the appropriate conclusions. Yamu Mutiara (2025). Based on the interview results, it can be concluded that the reason biology learning is difficult in class VIII Metthayom at Ban Mapring School is that the teacher's use of learning media is subpar, which makes the students disinterested in the process. This situation indicates that biology learning skills are still low among the students. Students may reply, think, and participate directly in the learning process in addition to receiving knowledge in a linear fashion thanks to this media, which helps to create a more dynamic, engaging, and interactive learning environment (Januarti et al., 2024). Because interactive PowerPoint presents more visually appealing and relevant content to students' learning demands, it has been demonstrated to improve student learning motivation, engagement, and creative thinking abilities. Conversely, interactive educational games are learning aids that integrate gaming features with instructional material in a planned way, allowing students to study while having fun in an environment referred to as edutainment. Thanks to challenges, feedback, and game rules that motivate students to think and act in an educational setting, educational games are made to promote active student participation, boost excitement for learning, and enhance cognitive abilities like problem solving and teamwork. In addition to providing amusement, this media can be used to enhance conceptual understanding, spark curiosity, and make learning enjoyable (Ulfa et al., 2025). MI Teacher Strategy for Game-Based Edutainment to Engage

Students in Learning. According to Selviana et al. (2025), interactive educational games can boost student engagement and interest in learning as well as making learning more relevant and student-focused. Application of Interactive Learning Games to Enhance Reading Literacy Skills of Elementary School Students (Selviana et al., 2025)

Several prior research have suggested that the use of immersive learning approaches and interactive media individually can increase student learning outcomes. However, studies studying the combination of the two, notably in the setting of eighth-grade Metthayom students at Ban Mapring School, Yaring, Pattani Province, Thailand, are still rather rare. In the meantime, innovation in more adaptable and effective teaching strategies is required due to the region's varied student characteristics and advancements in educational technology.

In order to determine the effects of using immersive learning strategies backed by interactive media on student learning outcomes, this research is essential. It is anticipated that this research will significantly advance theory and practice, especially in the creation of more creative, effective, and student-centered teaching methods. The steps for using interactive learning media are as follows:

How Blooket Works

Blooket turns learning into play! Let's see how the whole process is done in an easy and interactive way: (1) Choose Your Questions. (2) Start by selecting a set of questions. You can find pre-made questions in the "Discover" area, create your own, or upload them using Blooket's handy tools. (3) Choose a Game Style. (4) Next, choose the game mode that's right for you – Tower of Doom, Crazy Kingdom, or Gold Rush – there's something for every group. Once you're ready, click "Start Game" and share the game code with your students. (5) Invite Everyone. (6) Choose Your Questions. (7) Start by selecting a set of questions. You can find pre-made questions in the "Discover" area, create your own, or upload them. (8) Choose a Game Style. (9) Next, choose the game mode that's right for you – Tower of Doom, Crazy Kingdom, or Gold Rush – there's something for every group. Once you're ready, click "Start Game" and share the game code with your students. (10) Invite Everyone. (11) The teacher plays on the big screen, and students join in using a shared code. No account required – just log in and play. (12) Learn and Earn. (13) When students answer correctly, they are rewarded with "Blookos," adorable little characters that indicate how well they performed in the game. (14) Have Fun with Feedback: By having fun, students can understand what they have learned.

Instructors can also look over grade reports and pinpoint areas that need more focus. Students can utilize a browser to join Blooket instead of installing an app. To begin, launch a web browser on your laptop or phone and navigate to blooket.com/play. Next, click Join after entering the Game ID that your teacher shared. After that, provide a nickname as directed by your instructor and click OK/Join Game. As soon as the game begins, students will dive right in and engage in interactive learning activities based on the teacher's chosen mode. With the help of game-based quizzes, Blooket enables students to learn so that become more interesting and interactive.



Figure 1. Instructions for joining interactive learning media

Through an engaging and competitive game-based learning approach, the Blooket application offers the benefit of being an interactive learning tool that can improve student learning results, motivation, and active participation. In order to encourage students to actively participate in the learning process and focus more on finishing learning activities, this platform provides quiz questions in a variety of entertaining game styles. According to research, using Blooket game-based educational media can greatly boost students' motivation and comprehension of the subject matter, as well as their engagement in the learning process, including in language and science classes (Maulida Sari et al., 2024).

Method

This study employed a pretest-posttest control group design and a quantitative methodology. 34 eighth-grade students from Metthayom Ban Mapring School made up the population. Seventeen students from class 21 (the experimental class) and seventeen students from class 23 (the control class) made up the sample. Using interactive learning materials, the experimental class used a deep learning methodology.

Without the use of interactive learning resources, the control group adopted a traditional teaching methodology (Deep Learning, Held at Ban Mapring School from September 11 to December 2025).

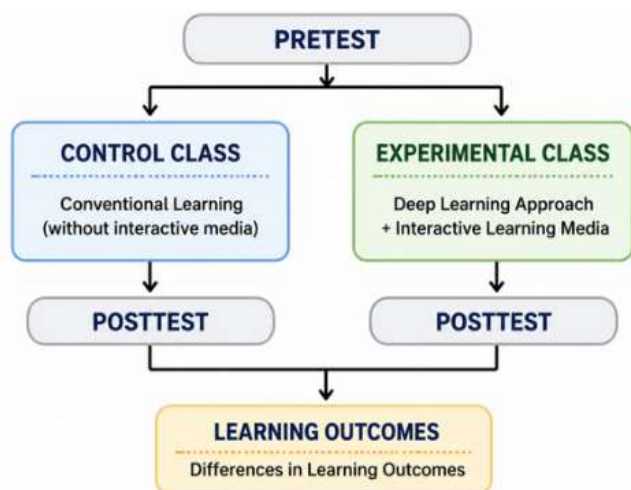


Figure 2. Quasi-experimental research design chart

Prior to therapy, students in the experimental group took a pretest (O_1) to ascertain their starting skill levels. Treatment (X) was then administered to this group through the use of a researcher-designed learning strategy. Students who participated in learning with the treatment were given a posttest (O_2) to gauge their learning outcomes. A pretest (O_1) and posttest (O_2) were likewise administered to the control group, but they were not given any preferential treatment. The control group's education was conducted utilizing standard teaching techniques that are frequently used in classrooms. The impact of the treatment was assessed by comparing the posttest scores of the experimental and control groups.

Result and Discussion

The following histogram of the group data will be used to describe the study features based on the experimental class distribution data table. The experimental class's pretest and posttest histograms demonstrate improved student learning results. The pretest showed that students' initial talents were still quite poor, with the maximum frequency of scores falling within the 46–51 interval. Following treatment, the posttest score distribution moved toward higher intervals, with a decline in frequency in the lower value intervals and a shift toward higher intervals with prominent frequencies in the 76–81, 88–93, and 100–105 ranges. This change in distribution suggests that The treatment given to the experimental class had a positive effect on improving student learning outcomes.

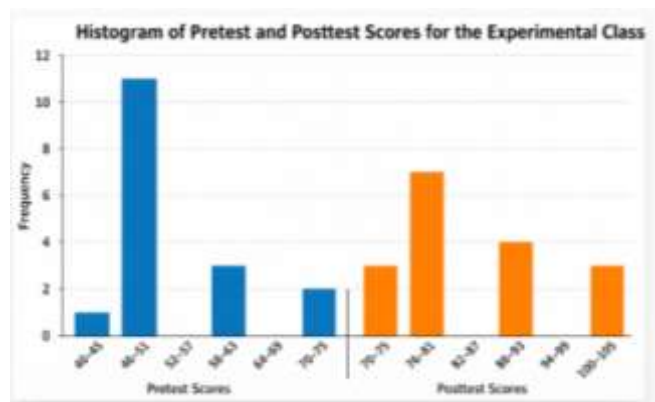


Figure 3. Histogram of pretest and posttest of experimental class students

The following histogram of the group data will be used to describe the research features based on the control class distribution data table.

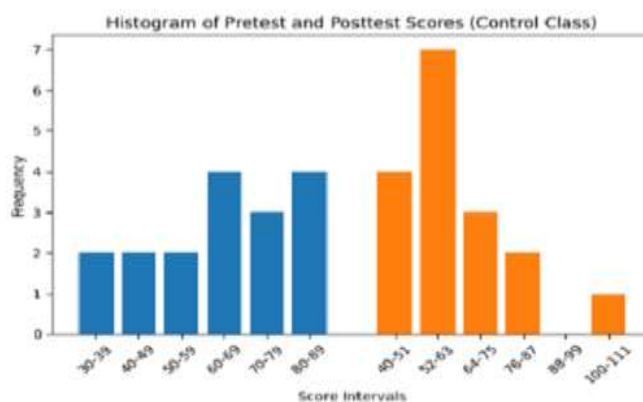


Figure 4. Histogram of pretest and posttest of students in class control

The control class's pretest and posttest histograms demonstrate a shift in the distribution of student results. Student scores on the pretest were distributed over a number of intervals, with the highest frequencies seen in the 60–69 and 80–89 ranges. This suggests that students' starting skills fell into the moderate range. The score distribution changed frequency and few children starting to achieve greater score intervals, up to 100–111. Even while learning outcomes increased, the rise tended to be more limited since the control class's score distribution changed less than that of the experimental class.

Final Data Analysis (Posttest) Tests for Normality and Homogeneity

The significant values for the experimental and control groups were 0.200 and 0.200, respectively, according to the normalcy test performed with SPSS Version 23 and the Kolmogorov-Smirnov test. The posttest data distribution for the experimental and

control classes was found to be normal based on the data in the control class. Additionally, the posttest data's homogeneity analysis using SPSS Version 23 revealed a significant value of Sig = 0.371. The null hypothesis (H_0) is thus accepted since Sig is higher than 0.05, and it may be inferred that the two classes are homogeneous.

Mean Difference Test

The significant value (Sig. (2-tailed)) = 0.000 is based on the findings of the computation analysis performed with the SPSS Version 23 program. Using the Independent Sample T Test as a basis, it may be concluded that H_a is accepted if the value (Sig. (2-tailed)) < 0.05, specifically 0.000 < 0.05. The results of the full calculation are as follows:

Independent Samples Test

The study was carried out at Ban Mapring School. There were 17 pupils in the experimental class and another 17 in the control class, which comprised the two courses. The data from the study will be described and interpreted in this section. Data descriptions of the learning outcomes of students who were instructed through interactive learning materials were carried out.

Based on the presentation and analysis of the data that has been carried out, it shows that there is a difference between t_{count} and t_{table} . The use of interactive learning media has an impact on the learning outcomes of class VIII students at Metthayom Ban Mapring School, according to the analysis's results using the t test, which yielded $t_{count} = 4.901$ and the known value of t_{table} with an alpha error level of 0.05 and $d_{kn} = (17+17)-2 = 32$ produced $t_{table} = 1.694$.

Research conducted at Ban Mapring School has led to the conclusion that learning media, including interactive media that can boost students' excitement for learning, have a substantial impact on biology learning outcomes. As demonstrated by the study's findings, pupils who get instruction through interactive learning materials perform better academically than those who do not.

Conclusion

The researcher can draw the conclusion that the use of interactive learning materials has an impact on students' learning outcomes based on study and data analysis. Using an alpha error level of 0.05 and $d_{kn} = (17+17)-2 = 32$, the hypothesis test findings demonstrate that $t_{count} > t_{table}$, namely $4.901 > 1.694$. It is evident from the computation's outcomes that H_a is accepted and H_0 is refused. Thus, the learning results of the eighth-grade pupils at Metthayom Ban Mapring School are impacted by the utilization of interactive learning materia

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Author Contributions

Conceptualization, Nurma Sari Siregar; methodology, Jalilah Azizah Lubis; validation, Fitri Agustina Lubis; formal analysis, Jalilah Azizah Lubis; investigation, Fitri Agustina Lubis; resources, Mutiara Yamu; data curation, Nurma Sari Siregar, Jalilah Azizah Lubis writing the review and editing, Nurma Sari Siregar, Jalilah Azizah Lubis, and Mutiara Yamu; visualization, supervision, Nurma Sari Siregar; project administration, Nurma Sari Siregar; funding acquisition, Nurma Sari Siregar. All authors have read and approved the published version of the manuscript.

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		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Hasil	Equal variances assumed	.669	.419	32	.000	20.588	4.201	12.031	29.145
	Equal variances not assumed			28.884	.000	20.588	4.201	11.995	29.181

Figure 5. Independent samples test

The findings of the study demonstrated that the experimental and control classes began under identical circumstances. According to the computation results, the experimental class's average pretest score was 53.53, whereas the control class's was 59.41, following tests for normality and homogeneity on the pretest data.

The posttest questions that were presented to students to gauge their learning outcomes had an average score of 84.12 for the experimental class and 63.53 for the control class, according to the data analysis results. There are differences between the two groups, as indicated by data processing using the t test, where the value (Sig. (2-tailed)) < 0.05, specifically 0.000 < 0.05. Hence, H_a is approved.

Conflicts of Interest

No conflict interest.

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