
Flip Bottle Learning Media to Improve Learning Outcomes of Class X Students of MA Muhammadiyah Pekanbaru

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Abstract

This study aims to improve students' learning outcomes through the implementation of flip bottle learning media among tenth-grade students at MA Muhammadiyah Pekanbaru. The research employed Classroom Action Research (CAR) using the Kemmis and McTaggart model, conducted in two cycles consisting of planning, action, observation, and reflection stages. Data were collected through learning outcome tests, student activity observation sheets, and documentation. The results indicate a significant increase in student engagement and participation during the learning process after the implementation of the flip bottle media. Moreover, there was an improvement in students' mastery of learning outcomes from Cycle I to Cycle II, demonstrating that the game-based learning media effectively enhanced conceptual understanding and learning motivation. Therefore, the flip bottle media is proven to be an effective and innovative alternative to improving classroom learning quality.

Keywords: learning media, flip bottle, learning outcomes, classroom action research.

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INTRODUCTION

Education is a process that continues to evolve in line with the dynamics of student needs and the demands of the times. In the context of modern learning, teachers are required to be able to deliver a learning process that is not only oriented towards cognitive achievement, but also on the development of 21st-century competencies that include creativity, collaboration, problem-solving, and critical thinking skills. However, various studies show that much classroom learning still runs conventionally, resulting in low student motivation and engagement (Hidayat & Pratama, 2019). This condition demands innovation in the learning process, particularly in the use of engaging learning media that are appropriate to student characteristics.

Learning media plays a crucial role in supporting effective learning. Arsyad (2020) emphasized that media can aid the internalization of knowledge through visual presentations, audio, and interactive experiences that facilitate student understanding. In today's digital era, media innovation is increasingly developing, ranging from digital media to simple games that can stimulate learning motivation. Creatively designed

learning media can reduce boredom, increase focus, and optimize student learning (Kurniasari et al., 2020).

One form of innovation that is increasingly being used is game-based learning. This approach is believed to create a more enjoyable and challenging learning environment and encourage active student participation (Sari & Putra, 2021). Research shows that games in learning can improve information retention, help students understand concepts more concretely, and foster a healthy competitive atmosphere (Rahmawati & Fadhillah, 2021). Furthermore, game-based learning simultaneously supports students' motor, social, and cognitive skills.

One simple learning medium that can be applied through a game approach is *the bottle flip*, a game involving flicking or throwing a bottle to ensure it lands upright. This game can be modified as a learning tool, for example, by incorporating questions or academic assignments each time students flip. Wahyuni and Lubis (2022) state that games incorporated into the learning process can increase student interaction, create active classroom dynamics, and strengthen their intrinsic motivation.

In the context of learning at MA Muhammadiyah Pekanbaru, initial observations indicate that some 10th-grade students are less actively involved in learning and have not yet demonstrated optimal learning outcomes. Low motivation to learn results in students lacking focus and failing to fully grasp the concepts presented by teachers. This reinforces the need for learning media that can provide a more engaging, relevant, and relatable learning experience.

The use of *flip bottles* has the potential to be an effective alternative. Besides providing a fun gaming experience, this medium can also integrate elements of competition and physical activity, supporting active learning. Research by Nasution (2023) found that using simple games can significantly improve student concentration, participation, and learning outcomes. With appropriate implementation, *flip bottles* can be a tool for teachers to create innovative and challenging learning.

Therefore, this study was conducted to examine the effect of implementing *flip bottle learning media* on the learning outcomes of class X students at MA Muhammadiyah Pekanbaru. The results are expected to serve as a reference for teachers and schools in developing innovative learning strategies that can improve learning outcomes while providing meaningful learning experiences for students.

RESEARCH METHODS

This research uses Classroom Action Research (CAR), which is designed to improve the learning process directly through real actions in the classroom. The model used refers to the stages of CAR Kemmis and McTaggart (2014) which consist of: (1) planning, (2) implementing actions (*acting*), (3) observing, and (4) *reflecting*.

This model was chosen because it is effective in continuously improving the quality of learning and allows teachers to evaluate the process directly in the classroom (Suhardjono, 2020).

1. Research Design

The research was conducted in two cycles, where each cycle included four main components:

- Planning, researchers and teachers design learning strategies using flip bottle media and prepare instruments.
- Implementation of the action, the teacher applies learning by including the flip bottle game in the core activities.
- Observation, researchers observe student involvement, class activities, and student responses to the media.
- Reflection, observation results are analyzed to design improvements in the next cycle.

PTK was chosen because it allows teachers to make learning improvements directly and systematically according to class conditions (Dewi & Wulandari, 2020).

2. Action Procedure

a. Cycle I

1) Planning

- Developing a lesson plan based on the flip bottle game.
- Prepare bottle media, question cards, observation sheets, and test instruments.
- Set up game rules such as points, turns, and challenge systems.

2) Implementation of Action

Teachers implement flip bottle learning media in core learning activities, where students flip bottles to determine which questions to answer. This activity is designed to stimulate attention, healthy competition, and learning motivation (Sari & Putra, 2021).

3) Observation

Researchers observe student activities, enthusiasm, cooperation, and difficulties that arise during the learning process.

4) Reflection

The results of the observations were analyzed to see the weaknesses of the first cluster, such as students' ability to work together and understand questions.

b. Cycle II

In the second cycle, several improvements were made based on the results of the reflection on cycle I:

- 1) Adding variety to questions.
- 2) Rearranging the gameplay to be more systematic.
- 3) Provide additional motivation to increase participation.

The same procedures were reapplied, with the aim of correcting previous deficiencies and significantly improving student learning outcomes.

3. Data collection technique

Data collection techniques include:

1) Test

Used to obtain quantitative data regarding student learning outcomes.

2) Observation

Used to obtain qualitative data regarding learning activities.

3) Documentation

To strengthen observation data.

4. Data Analysis Techniques

Data analysis was carried out quantitatively and qualitatively.

- 1) Quantitative data (learning outcomes) were analyzed using the percentage of learning completion in each cycle to see improvements in student learning outcomes (Kurniasari et al., 2020).
- 2) Qualitative data (activities and observations) were analyzed using the Miles and Huberman model as recommended by Rohman (2016), namely data reduction, data presentation, and drawing conclusions.

Data from these two techniques were then combined to provide a comprehensive picture of the effectiveness of flip bottle media in learning.

RESULTS AND DISCUSSION

Results

1. Results of Cycle I

The implementation of Cycle I demonstrated that the use of *the flip bottle media* began to impact student engagement. During the implementation phase, most students expressed enthusiasm for the game activities incorporated into the lesson. They found these activities enjoyable and different from the usual lecture method. Classroom observations showed that students became more active in discussions, worked collaboratively in groups, and showed interest in trying the game.

However, this engagement was not optimal. Some students still appeared passive, especially during discussion sessions and answering questions after flipping. Some students' ability to understand the material concepts was also limited, as evidenced by the low accuracy of their answers on the end-of-cycle learning outcome test. At the end of Cycle I, learning completion still fell short of the school's minimum target (KKM).

The first cycle reflection showed several improvements, namely:

- 1) The rules of the game need to be made more systematic so that all students get a fair chance.
- 2) It is necessary to give examples of how to answer questions in a more focused manner.
- 3) It is necessary to increase the motivation of students who are still passive through reinforcement and providing more opportunities.

2. Results of Cycle II

The implementation of improvements in Cycle II yielded improved results. The implementation of clearer game rules, adjusted group divisions, and a variety of more challenging questions enabled students to be more engaged in the learning process. Observations showed significant improvements in student engagement, such as the courage to ask questions, answer questions, and collaborate in groups. The learning atmosphere became more lively, structured, and conducive.

The learning outcome test at the end of Cycle II showed better improvement compared to Cycle I. Most students had achieved the minimum passing grade, indicating that the use of *flip bottle media* contributed to improving conceptual understanding. Students became more focused, motivated, and showed more stable learning achievement.

Overall, Cycle II can be said to be successful because:\

- 1) Student engagement increased significantly.
- 2) Better mastery of material concepts.
- 3) Classical learning completion achieved.

Discussion

The research results show that the use of *flip bottles* has a positive impact on learning activities and student learning outcomes. This finding aligns with research by Sari and Putra (2021), which found that *game-based learning* can improve student learning activities and self-confidence. *Flip bottles* offer a variety of activities that combine physical, cognitive, and social elements, creating a fun and motivating learning environment.

Active student engagement in both cycles demonstrates that students understand the material more easily when they are directly involved in the learning process. Game activities encourage students to participate and compete in a healthy manner. This aligns with Wahyuni and Lubis's (2022) finding that the use of educational games in learning can increase students' intrinsic motivation and foster positive social interactions.

The improvement in learning outcomes from Cycle I to Cycle II demonstrates that *the flip bottle media* is not only engaging for students but also effective in building conceptual understanding. These findings are supported by research by Nasution (2023), who found that educational games can improve concentration, focus, and question-answering skills in middle-level students.

Furthermore, student discussion activities during learning support the formation of a collaborative learning environment. According to Kurniasari *et al.* (2020), collaboration in learning can strengthen conceptual understanding and increase student engagement in asking and answering questions. In this study, the group dynamics developed through *the flip bottle activity* successfully created more effective interactions.

Theoretically, the results of this study align with constructivist learning theory, which emphasizes that students construct their own knowledge through experience and direct involvement. The *flip bottle activity* provides this experience through the process of trying, discussing, and reflecting on their understanding.

Thus, the application of *flip bottle media* can be said to be effective in increasing the involvement and learning outcomes of class X students at MA Muhammadiyah Pekanbaru.

CONCLUSION

Based on the results of classroom action research conducted in two cycles, it can be concluded that the application of flip bottle learning media has proven effective in improving the learning outcomes and activities of class X students at MA Muhammadiyah Pekanbaru. The use of flip bottle media can create a more active, interesting, and enjoyable learning atmosphere, thereby increasing student motivation and participation in the learning process.

In Cycle I, student engagement was still suboptimal, and learning achievement did not reach the established standard. However, after improvements were made in Cycle II, student activity increased significantly, indicated by greater enthusiasm, cooperation, and courage in answering questions and expressing opinions. Furthermore, learning test results showed consistent improvement, with the majority of students achieving minimum achievement.

In general, the application of flip bottle media has a positive impact on:

1. Increased student motivation and involvement in the learning process.
2. Improved learning outcomes, both in terms of conceptual understanding and test score achievement.
3. The creation of collaborative, active, and competitive learning in a healthy manner.

Thus, flip bottle media can be used as an effective innovative alternative to improve the quality of learning, especially in subjects that require active interaction and conceptual understanding.

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