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Improving Cognitive Learning Outcomes of Grade 3 Elementary School Students Using Labyrinth Learning Media in Social Science Materials

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Abstract

This research aims to improve the cognitive learning outcomes of 3rd grade students of SDN Keleyan 3 in Natural and Social Sciences (IPAS) subjects through the use of game-based maze learning media. The research method used is Classroom Action Research (PTK) with a qualitative approach, carried out in two cycles. Cycle I uses the conventional lecture method, while Cycle II applies labyrinthine media. Data was collected through observation, interviews, questionnaires, and documentation. The results showed a significant increase in students' cognitive learning outcomes from an average of 40.8% in Cycle I to 81.5% in Cycle II. Labyrinth learning media has been shown to be effective in improving cognitive learning outcomes, student understanding, active participation, and learning motivation. These findings confirm the importance of using innovative learning media that are in accordance with the characteristics of elementary school students.

Keywords:

Learning Media; Cognitive learning outcomes; IPAS

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A. Introduction

Based on the initial observations made, in grade III SDN Keleyan 3 still does not use media in its learning activities. This makes the material presented less interesting and students less motivated to learn. According to (Taupik, 2021) learning in such a way causes students to become bored, sleepy and not interested in learning. Students like to do things and play that are unrelated to what they are learning in class. This is also in accordance with (Maskar et al., 2021) in his observation that the learning process carried out by teachers, especially in science subjects, students are less interested in participating in learning, so that students become noisy in class, chat with friends and not focus on learning.

The main problem lies in the lack of use of learning media. In fact, student-centered learning media can improve skills, motivation, and achievement of learning outcomes. The goal of learning is to facilitate students' ability to reach their full potential (Wahyuningtyas, 2020). Learning media for everything, both physical and technical, in the learning process can help teachers to make it easier to deliver subject matter to students so as to facilitate the achievement of the right learning objectives according to Adam in Ansari and Sujarwo (2022). Therefore, the right use of media is the key to creating meaningful learning.

The objectives of IPAS learning in the Independent Curriculum are to increase students' interest and curiosity, encourage active engagement, develop inquiry skills, increase understanding of oneself and the environment, and develop knowledge and understanding of IPAS concepts (Agustina et al., 2022). The core material of IPAS can be taught comprehensively, simply and by involving direct learning experiences for students (Marwa et al., 2023). (Maharuli, 2021) also explained that the quality of the teaching and learning process is greatly improved by the use of learning media. Then, the media can increase student involvement in the learning process and make learning more entertaining and interesting.

One of the solutions offered is the use of visual media, such as a maze. According to Selamet (2020), visual media in particular has a dual role in learning. First, it serves as an effective motivational tool to increase students' interest and attention to the subject matter. Second, the visual media helps teachers in Deliver

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material in a more systematic and interesting way. According to Sahuni et al. (2020), visual media is a means of learning that utilizes the sense of sight, so that it can facilitate students' understanding of teaching materials. This opinion is in line with Masani (2021) who states that although it is different from print or audio media, visual media has the advantage of presenting abstract concepts in a more real way.

The use of visual media such as a maze, it is hoped that students will not only become passive recipients, but also invited to play an active role, collaborate, and develop critical thinking skills. A maze is a puzzle in the form of a complex road fork and has many dead ends. The principle of the game is that the player must find a way out of an entrance to one or more exits. To solve this game requires reasoning about uncertainty, like the problem-solving process in finding paths that are naturally carried out by humans according to Ahmad & Widodo in Yunita and Anshor (2025). The main advantage of the use of this media is its ability to facilitate the process of student understanding, so that learning materials can be absorbed faster and more deeply so that it is expected to be able to improve students' cognitive learning outcomes.

This is supported by previous research conducted by: 1) This research was conducted by Sandrina, (2024) showing that the use of Maze Matching Board media can affect the increase in students' creativity. 2) Research conducted by Angwarmasse & Wahyudi, (2021) shows that the use of Labyrinth Educational Game media increases the Problem-Solving Ability of grade IV students. 3) Research conducted by Nursolehatun, (2021) shows that Maze Adventure Game to Increase Interest and Achievement.

This study aims to test the effectiveness of the application of maze learning media in improving the cognitive learning outcomes of grade III students of SDN Keleyan 3 in science subjects. The urgency of this research is based on several factors: (1) the characteristics of grade III students who are at the stage of critical cognitive development, (2) the low interest in learning due to monotonous traditional teaching methods, and (3) the complexity of IPAS materials that require a more innovative approach.

It is hoped that the findings of this research can make a practical contribution to educators in choosing and developing appropriate learning media. In addition, the

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results of this research are also expected to be a reference in creating a more interactive learning environment, relevant to students' lives, and able to optimize the achievement of cognitive learning outcomes.

B. Method

This study applies the class action research method (PTK) following the Kemmis and McTaggart spiral model which consists of four iterative stages: planning, implementation, observation, and reflection. Each cycle is dynamically designed with the results of previous cycles in mind, allowing for a continuous improvement process. The research procedure began with a request for permission to the principal and class teacher on February 11, 2025, followed by observation and interview activities on February 19, 2025, and the implementation of learning actions on February 24, 2025.

The location of the research is SDN Keleyan 3 Bangkalan which is located in an agricultural area. This study focuses on grade III students by utilizing the available learning facilities and infrastructure. This school develops an active learning approach, where the use of innovative learning media is expected to improve students' academic achievement, especially in science subjects.

The research participants consisted of all third grade students who participated in IPAS learning. The specific purpose of this research is to optimize students' cognitive understanding through the implementation of maze media. The action design integrates four main phases in each cycle, allowing researchers to systematically analyze the effectiveness of learning media in improving learning outcomes.

The collected data will be analyzed to assess the achievement of predetermined success indicators, both in terms of process and learning outcomes. The findings of this study are expected to contribute to significant to the development of pedagogical practices in SDN Keleyan 3 in particular and basic education institutions in general.

C. Result and Discussion

The maze learning media that the researcher applied in grade III of SDN Keleyan 3 was specially designed according to the social science material to be taught. The maze is designed with 4 points as the end of the exit. The way to play students will be

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given an animal and at each point a food chain will be given as a choice. Then students are instructed to move the animals that have been given by going through the existing maze to determine the appropriate food chain. After that, students are given a question to determine whether the type of animal group is based on their diet.

This class action research produced a number of interesting findings. In the first cycle, the implementation of the lecture method by teachers did not give maximum results. The learning process tends to be one-way, dominated by teachers, and the interaction between teachers and students is less effective. Students seemed less enthusiastic and passive during teaching and learning activities, the cognitive learning outcomes produced by each did not reach the Minimum Completeness Criteria (KKM).

Here are the results of the first student questionnaire:

Table 1. Percentage of questionnaires cycle 1

No	Learning Process Observation Indicators	Percentage
1	Do you know what herbivores, carnivores, and omnivores are?	50%
2	What are herbivorous animals?	38%
3	What are carnivorous animals called?	46%
4	What are omnivorous animals called?	29%
5	Give an example of an animal that eats plants!	58%
6	Give an example of an animal that eats meat!	67%
7	Give examples of animals that eat plants and daging!	33%
8	What kind of animals do chickens belong to?	25%
9	What type of animal does a cow belong to?	33%
10	What type of animal does a cat belong to?	29%
	Correspondence	40,80%

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Data from the student questionnaire in the first cycle showed a low understanding of the material. For example, only 50% of students know the difference between herbivores, carnivores, and omnivores. The percentage of students' understanding of animal examples is also not optimal, such as only 33% can mention examples of omnivorous animals and 25% know the chicken category. Overall, the average student understanding only reached 40.8%, indicating that conventional learning without media has not been effective.

The following are the results of the questionnaire of the two students:

Table 2. Percentage of questionnaires cycle 2

No	Learning Process Observation Indicators	Percentage
1	Do you know what herbivores, carnivores, and omnivores are?	92%
2	What are herbivorous animals?	88%
3	What are carnivorous animals called?	83%
4	What are omnivorous animals called?	75%
5	Give an example of an animal that eats plants!	92%
6	Give an example of an animal that eats meat!	92%
7	Give an example of an animal that eats plants and meat!	71%
8	What type of animal do rats belong?	54%
9	What kind of animals do goats belong to??	88%
10	What type of animal does snakes belong to?	80%
	Correspondence	81,50%

In the second cycle, there was a significant increase in student learning outcomes. The questionnaire data showed that students' understanding of the material increased dramatically, with an average percentage reaching 81.5%. For example, 92% of students have been able to explain the differences between herbivores,

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carnivores, and omnivores, and give examples. Student participation also increased, with 81.5% showing an improvement in learning outcomes.

The results of the observation prove that the use of learning media has a positive impact on students' understanding and motivation to learn. The average grade of the class increased from 40.8% (first cycle) to 81.5% (second cycle), even exceeding the Minimum Completeness Criteria (KKM). This shows that a more varied and interactive learning approach has succeeded in improving the quality of the teaching and learning process in the classroom.

Thus, this study proves that innovations in learning methods and media can increase students' interest, participation, and cognitive learning outcomes. The implication is that a similar approach can be further developed to support the improvement of the quality of education in elementary schools. The discussion of the results of this research is in line with the theory of Pahenra (2020), learning media functions as a supporting means for educators to convey material effectively and interestingly, so that students can receive and understand learning content more optimally without feeling bored. Learning media plays an important role in creating a fun and easy-to-understand learning process. These findings are also supported by research by Maimanah and Prasetyo (2022) which shows the effectiveness of maze media in developing children's cognitive abilities.

The implementation of labyrinth media showed a significant improvement in students' cognitive learning outcomes. Data from the two research cycles are presented in Table 1.

Table 1. Comparison of learning outcomes of cycles I and II

Indicators of understanding	**Siklus I (%)**	**Siklus II (%)**
Identifying herbivores	38	88
Identifying carnivores	46	83
Understanding the concept of omnivores	29	75
Class average	**40,8**	**81,5**

Note: Data were processed from the student questionnaire with N=28

The findings of this study confirm the effectiveness of labyrinth media in improving the understanding of the concept of animal classification, with an average

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increase of 40.7%. These results are in line with Sundari (2023) research on visual media in elementary school, but provides added value through an interactive game approach. Three main benefits identified:

1. Transformation of abstract concepts: The maze helps visualize theoretical and concrete IPAS materials, according to the cognitive characteristics of grade 3 students (Nurlaela & Nuraeni, 2021).
2. Increased active participation: Interaction in maze games increased student engagement by 62% compared to the lecture method without using learning media.
3. Learning time efficiency: The achievement of 75% of KKM can be achieved in 1 cycle, faster than those who have not applied learning media, requiring 2-3 cycles (Mayasari et al., 2021).

The main difference with previous research lies in the aspect:

Media design: Game-based maze is more effective than static media by 15% difference

Contextualization of materials: Integration of local content (animals around schools) increases learning relevance by 20% Successful implementation also shows that simple media innovations can have a significant impact on learning in primary schools, especially for science materials such as IPAS that are abstract.

These results confirm the truth of previous research on maze learning media conducted by: 1) Research conducted by Angwarmasse & Wahyudi, (2021) shows that the use of Maze Educational Game media increases the Problem Solving Ability of grade IV students. 2) Research conducted by Nursolehatun, (2021) shows that Maze Adventure Game to Increase Interest and Performance. 3) This research was conducted by Sandrina, (2024) shows that the use of Maze Matching Board media can affect the increase in student creativity.

D. Conclusion

The use of learning media, especially game maze media, has proven to be effective in improving students' cognitive learning outcomes, as shown by the increase in learning completeness from 40.8% to 81.5% in animal classification materials at SDN Keleyan 3. These media not only strengthen the understanding of abstract

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concepts but also encourage students' active participation through a fun interactive approach. This success confirms the importance of learning media innovations that are adaptive to the characteristics of elementary school students, including the integration of local content.

In practical terms, these findings provide guidance for educators in designing more dynamic and effective learning. For future development, it is recommended to explore digital maze media, expand to other IPAS materials, and train teachers in designing simple game-based media. The implementation of a similar model can also be adapted for other subjects that require conceptual visualization, extending its positive impact in learning at the elementary school level.

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