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The Implementation of Three Dimensional Media in Learning Social Lessons to Improve the Learners' Cognition Elementary Education

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ABSTRACT

The observation results showed that there were 15 students out of 28 students who did not reach the KKM score. This is because the learning process is only centered on the teacher, using the lecture method, and without using tools in the form of media. As a result, learning becomes monotonous and has an impact on students' low cognitive scores. Therefore, innovation is needed by using three dimensional media that can improve students'cognitive scores. So, based on the background, the research aims to improve the cognitive outcomes of elementary school students in social studies learning at SDN A Indramayu with three dimensional media. This research is classroom action research, using the Kemmis & MC Taggart model, which applies 3 cycles, comprise planning, implementing, observing and reflecting. Data collection techniques use tests, observations, field notes, and documentation. The data analysis techniques used are quantitative and qualitative. Qualitative analysis applies to students' cognitive test results each cycle while qualitative analysis applies to observation results. The research results show that the use of three-dimensional media can improve the cognitive outcomes of class IV students at SDN A Indramayu. The research evidence is that there is an increase in students' cognitive scores from pre-cycle to cycle I increased by 20.24%, from cycle I to cycle II by 15.34%, and from cycle II to cycle III by 5%. Based on the research results, it can be concluded that class IV students at SDN A Indramayu can improve their cognitive abilities by implementing three dimensional media in social studies learning.

Keywords: *Three-dimensional media; Student cognitive; Social science; Elementary education*

ABSTRAK

Hasil observasi menunjukkan bahwa terdapat 15 siswa dari 28 siswa yang tidak mencapai nilai KKM. Hal tersebut disebabkan karena proses pembelajaran hanya berpusat pada guru, menggunakan metode ceramah, dan tanpa menggunakan alat bantu berupa media. Akibatnya pembelajaran menjadi monoton dan berdampak juga pada nilai kognitif siswa yang rendah. Maka dari itu, diperlukan inovasi dengan menggunakan media pembelajaran tiga dimensi yang dapat meningkatkan nilai kognitif siswa.. Berdasarkan latar belakang tersebut, penelitian bertujuan untuk meningkatkan hasil kognitif siswa sekolah dasar pada pembelajaran IPS di SDN A Indramayu dengan menggunakan media tiga dimensi. Penelitian ini merupakan penelitian tindakan kelas, menggunakan model *Kemmis & MC tagart*, menerapkan 3 siklus, yang meliputi tahap perencanaan, implementasi, pengamatan dan refleksi. Tenik pengumpulan data menggunakan tes, pengamatan, catatan lapangan, dan dokumentasi. Teknik analisis data yang digunakan yaitu secara kuantiatif dan kualitatif. Analisis kualitatif berlaku untuk hasil tes kognitif siswa setiap siklus sementara analisis kualitatif berlaku

untuk hasil observasi. Hasil penelitian menunjukkan penggunaan media tiga dimensi mampu meningkatkan hasil kognitif siswa kelas IV SDN A Indramayu. Bukti penelitian tersebut adalah adanya peningkatan nilai kognitif siswa dari pra siklus ke siklus I meningkat sebesar 20,24%, dari siklus I ke siklus II 15,34% dan dari siklus II ke siklus III 5%. Berdasarkan hasil penelitian, dapat disimpulkan siswa kelas IV SDN A Indramayu nilai kognitifnya dapat meningkat dengan mengimplementasikan media tiga dimesi dalam pembelajaran IPS.

Kata Kunci: Media tiga dimensi; Kognitif siswa; Ilmu pengetahuan sosial; Sekolah dasar

INTRODUCTION

Education refers to a conscious and planned effort to realize a learning atmosphere and active learning process for the students. Thus, they can develop their potential, spirituality, self-control, personality, cognition, character, and skill for the community, nation, and state (Regulation Number 20 the Year 2003). Education refers to the effort to change human behaviors based on the learners' experience while interacting with the environment. Education is important to develop positive impacts and prevent negative impacts (Mardiah & Astuti, 2021).

The implication of education in this era is broad. One of the implications is to realize the roles of the learners in the community. Education cannot stop inside classrooms and must-have outdoor classroom extension. The same matter goes for the implementation of education (Suryantika & Aliyyah, 2023; Yu et al., 2023). Therefore, education becomes the primary factor to improve the young generation and direct the national fate in the future. Learners and the young generation hold the national fate. These individuals struggle and continue the development of the nation.

One form of effort that teachers can make is that achieving qualified education does not rely on textbook. Educators must initiate relevant innovations based on the learners' necessities. Innovations may take forms into sophisticated or simple matters(Misharapovna & Shadjalilovna, 2022). Thus, the effort of the teaching-learning process requires the teacher-learner presence. The efforts to realize qualified education also require pedagogic innovations by the teachers (Jamoliddinovich, 2022). Thus, teachers are important to determine and promote qualified learning processes to facilitate the learners' understanding. Teachers also influence the learning outcomes of the learners, including the cognitive outcomes. The cognitive skill of learners refers to rational reasoning skills, covering knowledge acquisition, rational problem-solving, assessment, evaluation, and rational-event consideration (Laily, 2021). All psychological processes are correlated to individual learning, environmental understanding, and cognitive development as the aspect with knowledge-human growth correlation. The cognitive aspect emphasizes the logical aspect skills of the students, such as the targeted learning achievement (Hidayati & Aslam, 2021).

The cognitive skill of an individual is a complex process. The cognitive skills of an individual begin by remembering, understanding, applying, analyzing, evaluating, and creating (Newton et al., 2020). However, the preliminary observation on Saturday, October 7, 2023, at Public Primary School A Indramayu found that the fourth graders, 28 learners, still received conventional learning without optimum learning media utilization. Thus, the learners were not interested in listening or noting the materials in books. These matters bored the

learning processes. The preliminary observation also found that the pre-cycle mean score of the learners was 54.45 with a percentage of minimum accomplishment of 46.42%. The results showed that 13 learners accomplished the minimum score while 15 learners did not. The boring learning atmosphere lowered the learners' achievements (Lestari & Irawati, 2020; Septiana, 2021).

The pre-cycle results also found low cognitive skills of the learners. Therefore, the researchers attempted to improve the learner's cognition with learning media implementation. Learning media implementation could improve the learners' concentration and cognitive skills (Suryansyah & Suwarjo, 2016). Learning media is also useful to facilitate material explanations. Learning media could facilitate to making of abstract materials to be more concrete, to facilitate the complicated material understanding, and to facilitate the learners' understanding (Purba & Sarminta, 2021; Sa'adah, 2021). Learning media based on the learners' characteristics could improve the learning outcomes and achieve the learning objectives (Budianti & Azis Abdul, 2023).

The applicable learning media in this research was the three-dimensional media. The three-dimensional figure refers to the media with the capability of representing real objects. The media could explain the various matters that the real objects cannot explain (Yurnawilis, 2022). Through three-dimensional media, students can experience direct experiences that can be seen and touched, and using the media is easier (Jariah et al., 2021). The three-dimensional media is applicable in the learning process because the media could facilitate the learners' conceptual understanding.

Previous studies found successful learning media implementation with three-dimensional figures. Found that three-dimensional figures brought with second-handed materials could explain the material of the butterfly's living cycle. The media could facilitate the learners to understand learning materials (Jariah et al., 2021). Other research shows that three-dimensional media could improve the conceptual understanding of the materials of the dot, line, and field distances. The implementation of three-dimensional media in mathematics learning could facilitate learning and make learning joyful (Rokhayah, 2021). Besides that three-dimensional media could improve the learners' learning outcomes of science lessons. The researchers found the increments on each cycle were about 23.1% from the previous cycle. The implementation of three-dimensional media could make the learners have visual perception and visual sense involvement by observing the media (Yurnawilis, 2022).

Previous studies also found that the three-dimensional media could improve the learners' cognitive skills, motivation, and understanding. The media is similar to the real object so the learners could understand the abstract materials concretely. The novelty of this research deals with the implementation of three-dimensional media on science learning of the fourth graders of primary school. The media is made from cardboard, folding paper branches, and Styrofoam. The media represents the situations of low and high grounds and coastal areas.

Based on the explanation, the researchers attempted to improve the cognitive skills of the primary school learning on science learning at Public Primary School A Indramayu. The researchers expected the three-dimensional media implementation for the fourth graders could improve their cognitive skills.

METHOD

Type and Design

This classroom action research applied Kemmis & Mc Taggart's model, consisting of three cycles. Each cycle had one action. Figure 1 shows the research flow (Arikunto et al., 2021).

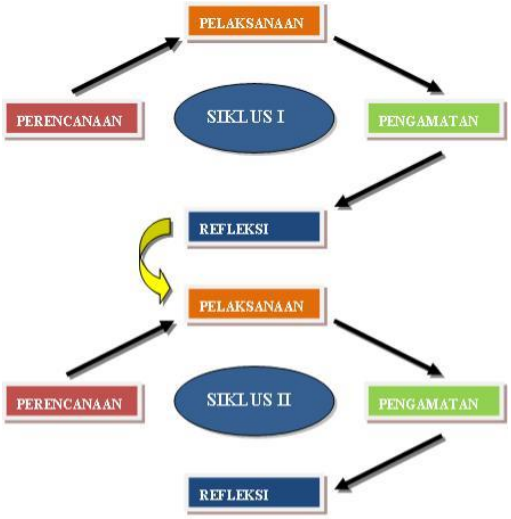

Figure 1. The Classroom Action Research design with Kemmis & Mc Taggart's Model

Figure 1 shows the four cycles, starting from planning, implementing, observing, and reflecting. In the planning cycle, the researchers arranged the learning instruments, such as the lesson plan, the three-dimensional media, the worksheet, the question item, and the assessment. Then, in the implementation step, the researchers applied the planned process and learning instruments. While implementing, the researchers also observed the teacher's activity. This matter was useful in determining the learning implementation. The final step was reflection to determine the success and drawbacks of future cycle improvement.

Data and Data Sources

The researchers took the primary data from the fourth graders of Public Primary School A Indramayu, consisting of 28 learners. The researchers took the subjects because the subjects needed some cognitive skill improvements in the learning process. On the other hand, the secondary data were the documentation of the learning instrument, assessment, and attendance list.

Data collection technique

The researchers used both primary and secondary data sources. The primary data deals with the cognitive test results of the learners while the secondary data deals with the observation sheet and learning activity documentation. The test consisted of 10 multiple choice with the indicators of explaining and identifying. The observation sheet was useful to observe the teacher's activity during the learning process. The documentation consisted of photographs of the learning process and learning instruments. Then, the researchers validated the data of test type with rubrics. The rubric of the answers had the function as the guideline for writing the questions. The rubric was useful to map the questions based on the adjusted discussion, content, and skill. The researchers validated the non-test data by triangulating or confirming

the data from the home teachers as observers. This step was useful to validate the data of teacher-learner learning activity.

Data analysis

The researchers analyzed the data, and the test results, quantitatively based on the minimum mastery grade of 75 and classical learning accomplishment of 85% from the total learners in the group (Aqib, 2014) The researchers analyzed the observation results with qualitative data analysis to determine the teacher activity while learning. The researchers used the percentage based on the categories to analyze the observation results (Kurniasih & Berlin, 2014).

Table 1. The Observation Sheet Assessment Criteria

The Categories of	Percentages
80% - 100%	Very excellent
70% - 79%	Excellent
60 % - 69%	Average
≤59%	Below average

Table 1. shows the criteria used to assess teacher activities during the implementation of learning on the observation sheet. The final value can be seen from the percentage results and categories obtained. Scores that exceed can reach the very good category and improvement is needed if results are in the poor category.

RESULTS AND DISCUSSION

The Learning Implementation

This research implementation was based on Kemmis & Mac Taggart's model, consisting of three cycles. The first step was pre-cycle by observing, interviewing, and sharing the test question items. The results found low cognitive skills of the learners. Some influential factors included the rarity of the teachers to apply relevant learning media, textbook-centered learning, and the implementation of the lecturing method. The results found the low cognitive skill level of the learners before applying the learning media based on the classical accomplishment with a percentage of 46,42%. Of 28 learners, thirteen learners reached the minimum mastery standard while 15 learners did not.

The pre-cycle test result found the importance of hands-on learning with the implementation of three-dimensional media. The first step was - planning. In this step, the researchers prepared the lesson plan, media, assessment, observation sheet, and documentation.

The implementation step began with a greeting before promoting the apperception for the learners by asking and answering questions. In the main activity, the researchers explained the materials with three-dimensional media. After that, the researchers grouped the learners into four groups and asked them to work on the worksheet. After that, the researchers asked them to present their work. The ends of the learning activity were a test and homework as the learning follow-up. The observation results of the teachers from cycles I, II, and III showed improvements from one cycle to the other. Table 2 shows the recapitulation results.

Table 2. The Teacher Observation Results

No.	The Data Aspects	The Teacher Observation Results			
		Pre-cycle	**Cycle I**	**Cycle II**	**Cycle III**
1	Total	5	7	10	13
2	Mean	0,3	0,46	0,66	0,86
3	The accomplishment percentages	33,33	46,67	66,67	86,67
4	Accomplishment	Below average	Below average	Average	Very excellent

Table 2 shows the observation results on the teachers with significant improvement from one cycle to the other. The improvement from the pre-cycle into cycle I is 13.34%, cycle I to cycle II with 20%, and cycle II to cycle III with 20%. The accomplishment falls in the category of very excellent.

The improvements of each cycle are associated with the excellent planning step, starting from preparing the lesson plan, media, assessment, observation sheet, and documentation. An excellent plan could encourage teachers to prepare for every unexpected thing during the learning process (Hargreaves, 2019). Then, in the learning process, the implementation of three-dimensional media facilitated the teachers to share the materials. The media could also provide real experience and stimulate the cognition of the learners. A real experience is the best learning medium (Zhang et al., 2020). Learning media could be a sophisticated-based learning media or necessity-based learning media for the learners to learn the materials. In this case, the three-dimensional media could answer the learners' necessity to learn. Learning media becomes the aspect of learning source with instructional material for the learners and learning stimulation(Rokhayah, 2021). The media implementation could encourage the learners to learn due to a joyful atmosphere (Septiana, 2021).

The improvements on each cycle were inseparable from the reflection process to manage the drawbacks of the previous cycles. The researchers revised the first cycle in terms of classroom management. Classroom management is an important matter to manage by teachers excellently to ensure excellent learning processes and outcomes (Asrial et al., 2019). Further revisions were with providing rewards for the learners that met the minimum mastery standard, such as stars. This reward provision influenced the learners because the reward could motivate them learners (Albiladi et al., 2018; Zhu et al., 2020).

The Cognitive Results of the Learners

The cognitive test results of the learners after the social lesson with the implementation of three-dimensional media showed an improvement in each cycle. Table 3 shows the recapitulation results.

Table 3. The Cognitive Test Results of the Learners

No.	The Data Aspects	The Cognitive Test Results of the Learners			
		Pre-cycle	Cycle I	Cycle II	Cycle III
1	Total	1525	1685	2225	2500
2	Mean	54,46	70,20	79,46	89,28
3	The percentage of classical accomplishment (%)	46,42%	66,66%	82%	89%
4	Remarks	Not Accomplished	Not Accomplished	Not Accomplished	Accomplished

Table 3 shows the improvement of the learners' cognitive scores from the pre-cycle to the subsequent cycles. The cognitive test results show the classical accomplishment percentage from the pre-cycle to cycle I with an increment of 20.24%, cycle I to cycle II with an increment of 15.34%, and cycle II to cycle III with an increment of 5%.

Based on the cognitive test results of the fourth graders, the learners had adequately significant improvement. The result also proves that three-dimensional media could influence the learning situation to be joyful and qualified. A qualified learning situation led to excellent learning outcomes(Mahmudi et al., 2020). The implementation of media for learning could also make the class alive. Learners could interact with their classmates while interacting. This interaction led to active asking-answering activities (Ningrum & Dahlan, 2023). The implementation of three-dimensional learning could facilitate the teachers to explain the materials, encourage the learners, and improve the learners' cognitive skills (Budianti & Azis Abdul, 2023). The same matter goes for the curiosity of the learners after learning with the applied learning media (Sofiasyari et al., 2023).

The cognitive domain refers to the domain to have by the learners. Active learners during the learning process could understand the learning material (Lestari & Irawati, 2020). During the learning process, the learners, the teachers, and the environment were correlated to each other to foster the cognition of the learners (Indriyani, 2019). The learners' cognition improved in each cycle due to the implementation of interesting media to facilitate the material conceptual understanding (Pristy & Sukartono, 2023). The learning process showed the learners were active in answering the questions and working on the cognitive question items (Wahyuningtyas et al., 2023). The learning media implementation brought the opportunity for the learners to construct personal cognition (Suweni et al., 2023).

Research on the use of three-dimensional media is important to carry out because using three-dimensional media can concretize abstract social studies learning, so that theories that are difficult to understand become easier to understand and learning is not monotonous and students' cognitive abilities can also improve (Ningrum & Dahlan, 2023). In line with another statement, the use of learning media is very necessary for students in elementary schools, because students need to understand new things that are not yet visible (Imanulhaq & Ichsan, 2022). Apart from that, each student also has different developments, therefore teachers must have the ability to help students understand learning concepts (Rahmaniar et al., 2021). Therefore, learning media is needed to convey information to students, so that students can

enjoy the lessons delivered by the teacher and students' cognitive abilities can improve (Fransiska et al., 2024).

CONCLUSION

Based on the research results, the implementation of three-dimensional media for social lessons could improve the cognition of the fourth graders at SDN A Indramayu. The implementation of three-dimensional media could positively influence the learners to be more interactive, active, excited, and responsive in understanding the material. From the results that the percentage of classical completeness increased from pre-cycle to cycle three. The novelty of the research is that three dimensional media is implemented in social studies learning in grade IV elementary schools. The media is made from cardboard, manila paper, origami paper, twig sand and styrofoam. This media explains material about the conditions of the lowlands, highlands and beaches. Therefore, three-dimensional media can be used as a reference to improve students' cognitive abilities. It is recommended for future researchers to implement three-dimensional media in learning and other class levels.

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