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Innovation in Science Learning Through Educational Videos and the "Magic Bag" Media for Third-Grade Students at SDK Roworeke 2.

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Abstract

This study aims to analyze innovation in science learning through the use of instructional videos and the "Magic Bag" learning media, as well as to identify its potential development as a variable for future research. Data were collected through observation, interviews, and documentation of the science learning process of third-grade students at SDK Roworeke 2. The implementation of this learning innovation utilized instructional videos as audiovisual media to help students understand science concepts more concretely, while the Magic Bag media was used as an educational game containing picture cards and simple objects related to science materials. The results of the study indicate that the use of instructional videos increases students' attention and understanding of the material, while the Magic Bag media encourages active participation, collaboration, and students' confidence in expressing their opinions. The learning process becomes more interactive, enjoyable, and meaningful, which positively impacts students' interest and learning outcomes in science. The findings suggest that the combination of audiovisual media and simple manipulative media can serve as an effective alternative for innovative learning in elementary schools and has the potential to be further developed in future research.

Keywords: ***Science Teaching, Instructional Videos, Magic Bag, Learning Innovation, Elementary School.***

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INTRODUCTION

Natural Science (Science) in elementary schools plays an important role in fostering curiosity, scientific thinking skills, and problem-solving abilities from an early age. Science learning is not only oriented toward mastering concepts but also toward discovering knowledge through direct experiences, observation, and exploration activities. This is in line with Samatowa (2016), who states that science learning in elementary schools should emphasize direct experiences so that students can understand the natural environment scientifically and meaningfully.

Natural Science (Science) in elementary schools plays an important role in fostering curiosity, scientific thinking skills, and problem-solving abilities from an early age. Science learning is not only oriented toward mastering concepts but also toward discovering knowledge through direct experiences, observation, and exploration activities. This is in line with Samatowa (2016), who states that science learning in elementary schools should emphasize direct experiences so that students can understand the natural environment scientifically and meaningfully.

However, in reality, science learning in elementary schools is still often teacher-centered. The learning process tends to rely on lectures and textbooks, resulting in students being less active in learning activities. This condition affects students' interest in learning, participation, and conceptual understanding. Trianto (2014) argues that teacher-centered learning makes students passive because they are given limited opportunities to experience, discover, and construct knowledge independently.

In terms of cognitive development, elementary school students are in the concrete operational stage. According to Piaget, students at this stage understand concepts more easily through real objects, direct experiences, and visualizations. Therefore, the use of learning media is very important in helping students understand abstract science concepts. Arsyad (2017) states that learning media function to clarify instructional messages, thereby improving both the learning process and learning outcomes.

One effective medium is educational video. Videos combine visual and audio elements, helping students understand learning materials more concretely. Mayer (2009), through the Multimedia Learning Theory, explains that students learn better from a combination of words and pictures than from words alone. This indicates that educational videos can improve students' attention, motivation, and understanding of science concepts.

In addition to technology-based media, educational game media are also important in science learning. Learning activities presented in the form of games can create an enjoyable learning atmosphere and increase student participation. Hamalik (2015) states that the use of

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varied learning media can enhance learning motivation and improve student interaction during the learning process. One simple educational game medium that can be used is the “Magic Bag” media, which contains picture cards and simple objects related to science topics. This medium allows students to learn through hands-on activities, group discussions, and exploration. Educational game media combine learning and play. According to Hamalik (2015), learning through game-based media can increase students’ motivation, engagement, and interaction in the learning process.

Based on preliminary observations conducted in Grade III at SDK Roworeke 2, science learning still shows limitations in the use of innovative learning media. Students appeared less active, easily bored, and had not fully understood the material being taught. These conditions indicate the need for learning innovation that combines audiovisual media and educational game media to make learning more interesting, interactive, and meaningful.

Based on the description above, this study was conducted to examine innovation in science learning through the use of educational videos and the Magic Bag media for third-grade students at SDK Roworeke 2. It is expected that this research will contribute to improving the quality of science education in elementary schools and serve as a reference for teachers in developing creative, effective, and student-centered learning media that are appropriate to the characteristics of elementary school students.

OVERVIEW OF CONNECTIVISM

Modern-day learning is taking place via network connections as people exchange respective skills, information, viewpoints, experience, and views in digital or online learning settings (Dunaway, 2011; Siemens, 2008). Because knowledge is continually evolving, its usefulness and correctness may vary significantly when new contributions to a field are discovered. As a result, one's grasp of a matter, as well as student ability to learn about the subject at hand, will vary from time to time. Connectivism emphasizes two crucial abilities that help to learn: the capacity to search for existing knowledge and the capacity to eliminate alternative and superfluous knowledge. The process of learning is continuous in the sense that individuals will access the network to exchange and discover new knowledge, subsequently adjust existing views based on new understanding, and then reconnect to a community to communicate such experiences and discover new knowledge again. Essentially it is, the ability to understand is much more important than what is known. The capacity to make judgments based on learned knowledge is seen as essential to the education process (Siemens, 2008). Driscoll's (2005) research

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was used to classify knowledge among three main philosophical frames notably objectivism, pragmatism, and interpretivism. Objectivism holds that reality exists outside of the mind and that learning and perception are gained via experience.

Pragmatists view learning as the result of a bargain involving thought and practice (Siemens, 2008). The Internet has been reshaped into a huge blended learning environment, with knowledge storage tanks such as online virtual classrooms, online forums and virtual societies to successfully execute, replicate, communicate, and convey content in to the grip of students and teachers (Kropf, 2013). More significantly, the Internet has become a central focus of connectivism, which is potentially dynamic in innovative educational philosophy. Adelstein (2013) states that students nowadays are 'do-it-yourself' thinkers. Connectivism sees learning as an unstructured chance and it converts individual students into 'networks' themselves, equally skilled in exchanging their skills and experience with other people after gaining knowledge from a sequence of nodes (Albert & Steve, 2013). Individuals may alter or reform their behavior in response to stimuli such as incentives and penalties. Online communication platforms can turn students into someone who can manage their schedule and arrange their duties appropriately amidst the everyday turmoil of plentiful data (Couros, 2009; Garcia et al., 2012).

OVERVIEW OF CONSTRUCTIVISM

According to the theory of constructivism, people learn through observation and inquiry. By engaging in various life experiences and observing their outcomes, individuals construct their understanding and knowledge of the world. New information must be compared with existing knowledge and beliefs, which may require a person to modify their belief system or even reject the new information if it is considered irrelevant. In this process, individuals play an active role in constructing their own knowledge and experiences. To achieve understanding, people need to ask questions, conduct investigations, and evaluate what they already know. A constructivist approach in the classroom can be implemented through various teaching practices that place students at the center of the learning process (Bereiter, 1994; Tam, 2000).

According to Driscoll (2005), the constructivist model suggests that understanding can only be formed within the human mind and does not necessarily correspond to objective reality. Students continuously attempt to construct mental representations of the world based on their perceptions. They constantly update their thinking as they encounter new experiences, gradually building their perception of reality (Spector, 2001).

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Another important idea in constructivism is that learning is an active rather than a passive process. Students must build understanding based on the experiences they encounter in new situations. When new experiences conflict with existing knowledge, students may adjust their understanding to accommodate the new information. During this process, students actively use their prior knowledge, identify important aspects of new situations, evaluate the consistency between previous and emerging understandings, and modify their knowledge accordingly (Gopnik & Wellman, 2012; Moons & De Backer, 2013; Mvududu, 2005; Naylor & Keogh, 1999; Phillips, 1995).

Therefore, constructivist theory emphasizes that knowledge is actively constructed by students through experience, interaction, and reflection. As a result, learning should provide opportunities for students to explore, observe, discuss, and discover concepts independently so that the understanding they acquire becomes more meaningful and long-lasting.

RESEARCH METHOD

1. Research Design

This study employed a descriptive qualitative research design supported by simple quantitative data. The research focused on providing a clear and factual description of how science learning was conducted using instructional videos and the Magic Bag media in the classroom. Rather than comparing classes or conducting complex experiments, the study emphasized observing changes that occurred during the learning process. The researcher observed how students learned, how they responded to the media used, and how their interest and understanding developed after the learning activities.

Qualitative data were obtained through observations, interviews, and documentation, which were used to describe students' learning activities and experiences. Meanwhile, simple quantitative data were obtained from students' learning test results to determine improvements in their understanding of science concepts. Through this approach, the researcher was able to provide a comprehensive description of the implementation of science learning innovation through instructional videos and the Magic Bag media among third-grade elementary school students.

2. Research Site and Time

This study was conducted at SDK Roworeke 2, specifically with third-grade students. The selection of this school was based on previous observations, which allowed the researcher to become familiar with the classroom learning conditions. The study was carried out during the

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2026/2027 academic year and was integrated into regular science lessons. This means that the research took place during normal science class hours without disrupting students' learning activities. By conducting the research directly in the classroom, the researcher was able to observe firsthand how instructional videos and the Magic Bag media were implemented and how students responded throughout the learning process.

3. Research Subjects

The subjects of this study were:

- One third-grade teacher as the instructor implementing the learning activities.
- All third-grade students as participants in the learning process.

Students were the primary focus of the study because they directly participated in learning activities using instructional videos and the Magic Bag media. Through students' involvement, the researcher was able to observe their responses, interest, participation, and understanding during the science learning process. The teacher was also included as a research subject because of their role in implementing the learning media in the classroom.

4. Research Procedures

The research was conducted through several stages to ensure that the activities were organized and easy to understand.

a. Preparation Stage

At this stage, the researcher prepared all materials and resources needed before the learning activities began, including:

- Preparing lesson plans based on the science topics to be taught.
- Selecting appropriate instructional videos.
- Designing and preparing the Magic Bag media containing picture cards and simple objects related to science topics.
- Preparing observation sheets, interview questions, and test items to measure students' learning outcomes.

This stage was important to ensure that the learning process could run smoothly and effectively.

b. Implementation Stage

During this stage, science learning activities were conducted using instructional videos and the Magic Bag media. The activities consisted of three phases:

1) Introduction Activities

At the beginning of the lesson, the teacher greeted the students and asked about their

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well-being to create a relaxed and positive classroom atmosphere. The teacher then explained the learning objectives so that students would understand what they were going to learn. In addition, the teacher asked simple questions related to the topic to identify students' prior knowledge. These activities were intended to prepare and motivate students for learning.

2) Main Activities

In the main phase, instructional videos and the Magic Bag media were integrated into the learning process. First, students watched a science instructional video prepared by the teacher. While watching, students were encouraged to pay close attention to the content. Afterward, the teacher facilitated a discussion about what students had seen and understood from the video.

Next, students were divided into small groups to work collaboratively. Each group had the opportunity to use the Magic Bag media. Students took turns drawing picture cards or objects from the bag and explaining their relationship to the science topic being studied. This activity encouraged students to speak, discuss, and help one another understand the material. After completing their group discussions, each group presented its findings to the class. The teacher then provided additional explanations to strengthen students' understanding.

3) Closing Activities

At the end of the lesson, the teacher guided students in summarizing the material that had been learned. Students were also given the opportunity to share their opinions and impressions of the learning experience. Finally, they completed simple assignments or questions to assess their understanding of the topic.

5. Evaluation Stage

After the learning activities were completed, the researcher conducted an evaluation to determine the effectiveness of instructional videos and the Magic Bag media. Students' participation, interest, and enthusiasm were observed using observation sheets. In addition, students' assignments and test results were examined to measure their level of understanding of science concepts. Through this evaluation, the researcher was able to determine whether the learning process had been successful and whether the media contributed to improving students' interest and learning outcomes.

6. Data Collection Techniques

Data were collected using several simple methods to obtain a clear picture of the classroom learning process. First, observations were conducted during classroom activities. The researcher observed students' behavior, including their attention to the teacher's explanations, participation in asking and answering questions, and enthusiasm while using instructional videos

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and the Magic Bag media.

Second, interviews were conducted with the teacher and several students after the learning activities. The interviews aimed to gather their opinions about the use of instructional videos and the Magic Bag media, including whether the lessons were more interesting, easier to understand, and enjoyable. Third, tests were administered after the learning activities. The tests consisted of simple questions related to the material studied. The results were used to assess students' understanding after learning through the media.

Fourth, documentation was collected in the form of photographs of classroom activities and samples of students' work. These documents served as evidence that the research activities had been conducted.

7. Data Analysis Techniques

After all data had been collected, the researcher analyzed them using simple and understandable procedures. The first step was data reduction, which involved selecting and organizing important data obtained from observations, interviews, tests, and documentation that were relevant to the research objectives.

The second step was data presentation. The data were organized into descriptive narratives and simple tables to make them easier to read and understand. The final step was drawing conclusions based on the analyzed data. These conclusions were used to answer the research objective, namely to determine how the use of instructional videos and the Magic Bag media could improve the interest and science learning outcomes of third-grade elementary school students.

RESEARCH FINDINGS AND DISCUSSION

1. Research Findings

This study was conducted with third-grade students at SDK Roworeke 2 by implementing an innovation in science learning through the use of instructional videos and the Magic Bag media. The research was carried out during science learning activities using observation, interviews, simple tests, and documentation to collect data regarding student engagement, learning interest, and understanding of the learning material.

a. Observation Results of the Learning Process

Based on the observations conducted during the learning process, changes in students' learning behavior were identified after the implementation of instructional videos and the Magic Bag media. Prior to the intervention, students tended to be passive, less focused, and easily bored

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when the teacher explained the material using conventional methods. However, after the innovative learning media were introduced, the learning atmosphere became more positive.

When the instructional videos were presented, students appeared more focused on the material. They showed interest in the moving images, sounds, and visual explanations displayed in the videos. Students found it easier to understand the material because the science concepts were explained concretely and connected to their surrounding environment.

Furthermore, when the Magic Bag media was used, students demonstrated high enthusiasm. They actively selected picture cards or simple objects related to science topics and discussed them within their groups to explain their meanings. Learning activities became more dynamic as students asked questions, expressed opinions, and confidently shared their answers in front of the class.

Overall, the observation results indicated improvements in several aspects of learning, as shown in the following table.

Table 1. Observation Results of Students' Learning Activities

Observed Aspect	**Before Learning Innovation**	**After Media Implementation**
Student attention	Less focused	More focused and enthusiastic
Student participation	Tended to be passive	More active in discussions
Confidence in asking/answering questions	Low	Improved
Group cooperation	Less visible	Better
Interest in science learning	Low	Increased

Based on the table above, it can be concluded that the use of instructional videos and the Magic Bag media had a positive impact on the science learning process in Grade III at SDK Roworeke 2.

b. Interview Results

Interviews with the third-grade teacher indicated that the use of innovative learning media positively influenced students' learning processes. The teacher stated that students became more active and understood the material more easily compared to previous lessons that relied solely

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on lectures and textbooks. The teacher also explained that instructional videos helped students understand science concepts that were difficult to explain verbally, while the Magic Bag media encouraged greater student participation because students learned through play.

Meanwhile, interviews with several students revealed that they enjoyed science lessons using instructional videos and the Magic Bag media. Most students reported that learning was more enjoyable because they could directly observe images through videos and engage in learning through play using the Magic Bag media. Several students also stated that they felt more confident answering questions and cooperating with their group members during the learning process.

c. Learning Achievement Test Results

To determine students' understanding of science concepts, a simple test was administered after the learning activities. The results showed that most students demonstrated improved understanding of the material.

Table 2. Students' Learning Evaluation Results

Description	**Result**
Number of students who understood the material well	Most students
Ability to answer science questions	Improved
Ability to explain the material again	Better

The evaluation results indicate that the use of instructional videos and the Magic Bag media helped students understand science concepts better than previous learning methods. This was evident from their ability to answer questions and explain the material they had learned.

2. Discussion

The findings indicate that innovation in science learning through instructional videos and the Magic Bag media had a positive impact on the learning process of third-grade students at SDK Roworeke 2. These impacts were reflected in increased attention, active participation, confidence, cooperation, learning interest, and understanding of science concepts. Learning that was previously teacher-centered shifted toward a more active, student-centered learning approach.

a. The Effect of Instructional Videos on Students' Understanding of Science Concepts

The findings revealed that instructional videos enhanced students' attention and understanding of science concepts. When the videos were shown, students appeared more

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focused and enthusiastic about learning. This was because the videos presented material through a combination of images, sound, text, and animation, making abstract concepts more concrete. These findings are consistent with Arsyad (2017), who stated that learning media help clarify instructional messages and improve students' attention, interest, and learning outcomes. In science education, videos help students understand concepts through realistic visualizations rather than relying solely on verbal explanations.

The findings are also relevant to Richard E. Mayer's Multimedia Learning Theory. Mayer (2009) argued that students learn more effectively through a combination of words, images, and sounds than through verbal explanations alone. Information received through both visual and auditory channels is more easily processed and stored in students' memory. In this study, students not only listened to explanations but also directly observed images and science phenomena through instructional videos. This helped them understand concepts more concretely and made the material easier to comprehend.

Similarly, Daryanto (2016) stated that video media have advantages in presenting processes, events, and objects that are difficult to observe directly. Therefore, videos are highly effective for elementary science learning, which often involves natural and environmental phenomena. In addition, increased student attention during lessons indicates that audiovisual media can enhance learning motivation. This finding supports Sudjana and Rivai (2019), who argued that audiovisual media create more engaging learning experiences, reduce student boredom, and improve learning motivation.

b. The Effect of the Magic Bag Media on Student Participation and Learning Interest

In addition to instructional videos, the Magic Bag media significantly contributed to increasing student involvement in science learning. Observation results showed that students actively participated in discussions, confidently expressed opinions, and demonstrated strong curiosity while using the media. The Magic Bag is an educational game-based medium that allows students to learn while playing. The use of picture cards and simple objects related to science topics directly involved students in the learning process. Learning became less monotonous because students could explore the material through hands-on activities.

These findings are consistent with Hamalik (2015), who stated that varied learning media can increase motivation, enhance student participation, and promote better interaction during learning activities. The use of the Magic Bag media is also aligned with Jean Piaget's cognitive development theory, which states that elementary school students are in the concrete

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operational stage. At this stage, children understand concepts more easily through real objects, direct experiences, and concrete activities.

In this study, students could see, touch, and observe objects or pictures related to science topics. These direct learning experiences helped them understand the material more meaningfully than simply reading textbooks or listening to teacher explanations. The findings are also consistent with Jerome Bruner's Discovery Learning Theory, which suggests that students understand concepts more effectively when they discover knowledge through active learning experiences. When students selected cards or objects from the Magic Bag, they actively attempted to understand, discuss, and explain the relationship between the objects and the science concepts being studied.

c. The Effect of the Media on Student Cooperation and Social Interaction

The use of the Magic Bag media in group learning activities also positively influenced students' cooperation skills. During the lessons, students helped one another, discussed ideas, and collaborated to understand the material. This finding is consistent with Lev Vygotsky's Social Learning Theory, which emphasizes that cognitive development is strongly influenced by social interaction. According to Vygotsky, students learn more effectively when they receive support from peers and teachers during the learning process.

Through group discussions using the Magic Bag media, students had opportunities to exchange ideas, express opinions, and learn from one another's experiences. As a result, learning became more interactive and helped students gain a better understanding of science concepts.

d. Integration of Instructional Videos and the Magic Bag Media in Science Learning

The combination of instructional videos and the Magic Bag media proved to be more effective than using only one type of media. Instructional videos provided initial conceptual understanding through visualization, while the Magic Bag strengthened understanding through direct learning experiences. These findings are consistent with Edgar Dale's Cone of Experience Theory, which explains that learning becomes more meaningful when students directly experience what they are learning rather than merely hearing explanations or reading information.

In this study, students first received information through instructional videos and then reinforced their understanding through educational game activities using the Magic Bag media. This combination made it easier for students to understand and remember the material. Furthermore, this approach supports the concept of active learning as proposed by Silberman (2013), who argued that learning becomes more effective when students actively participate through thinking, discussing, asking questions, and engaging in direct learning activities.

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Based on the findings and supporting theories, it can be concluded that innovation in science learning through instructional videos and the Magic Bag media for third-grade students at SDK Roworeke 2 effectively improved students' attention, participation, cooperation, confidence, learning interest, and understanding of science concepts. The use of these two media created a more interactive, enjoyable, and meaningful learning environment and is therefore recommended as an alternative innovation for science learning in elementary schools.

Appendix



Figure 1. Photo taken during the explanation of the Magic Bag (Kantung Ajaib) learning media.



Figure 2. Group photo with the students after the presentation of the material and the game activities.

CONCLUSION AND SUGGESTIONS

1. Conclusion

Based on the results of the research and discussion regarding science learning innovation through learning videos and the Magic Bag (Kantung Ajaib) media for Grade III students at SDK Roworeke 2, it can be concluded that the use of these two learning media has a positive impact on both the learning process and students' learning outcomes. The use of learning videos was proven to increase students' attention and understanding of science materials. Presenting lessons through visual and audio elements helped students understand science concepts more concretely and attractively. Students became more focused during the learning process because the material was delivered through moving images, sound, and explanations that were easy to understand.

In addition, the Magic Bag media also made a significant contribution to increasing students' active involvement during the learning process. Through educational game activities involving picture cards and simple objects, students became more active in discussions, teamwork, and expressing their opinions confidently. Learning was no longer monotonous but

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became more enjoyable and meaningful. The results of the study also showed that the combination of learning videos and the Magic Bag media was able to increase students' interest in learning and their understanding of science materials. Learning became more interactive because students not only received information from the teacher but were also directly involved in the learning process through observation, discussion, and learning-through-play activities.

Therefore, science learning innovation through learning videos and the Magic Bag media can be considered an effective alternative for improving the quality of science education in elementary schools, particularly for Grade III students. This innovation also has the potential to be further developed for other science topics and different grade levels.

2. Suggestions

Based on the results of the research, several suggestions can be offered as follows:

a. For Teachers

Teachers are encouraged to develop more innovative, creative, and student-centered learning media that suit the characteristics of elementary school students. The use of learning videos and educational game media such as the Magic Bag can serve as an alternative to create science learning experiences that are more interesting, active, and enjoyable.

b. For Schools

Schools are expected to support the use of innovative learning media by providing adequate facilities and infrastructure, such as simple technological devices for displaying learning videos and materials needed to create creative learning media.

c. For Students

Students are encouraged to participate more actively in the learning process and make use of learning media as a tool to improve their understanding of science subjects.

d. For Future Researchers

This study still has limitations because it was conducted in only one class and focused on a single science topic. Therefore, future researchers are encouraged to develop similar studies on different topics, at other grade levels, or by adding research variables such as learning motivation, learning outcomes, critical thinking skills, and student creativity.

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