

Improving Student Learning Outcomes Using Video Media on Elements, Compounds, and Mixtures for Class VIII

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ABSTRACT

Science learning at Sekolah Menengah Pertama (SMP) Madani Depok reveals that class VIII students struggle to comprehend abstract subject matter. Learning systems that focus on teachers tend to place more emphasis on the material that must be taught; this will influence learning outcomes and students' interest in learning. Since students cannot see the process and can only imagine it, they are less interested in learning. This research aims to enhance the learning outcomes of class VIII students at SMP Madani Depok in the areas of Elements, Compounds, and Mixtures, utilizing video learning media and descriptive analysis methods derived from classroom action research. In this research, two cycles were used. Each cycle consists of four stages, namely: planning, implementation, observation, and reflection. The target of this research is class VIII of SMP Madani Depok. From the results of the analysis, it was found that student learning outcomes had increased from pre-cycle, cycle I, and cycle II. Data obtained from Pre-cycle activities had an average score of 41.76. In cycle I, students had an average score of 70 and had a learning completion percentage of 63.7%. The final test carried out in cycle II had scores above the Minimum Mastery Criteria for 15 students, with a percentage of 88.2%. This research concludes that applying video media can improve students' science learning outcomes, particularly in elements, compounds, and mixtures. Furthermore, this video media application can serve as an alternative for science learning. The effectiveness of applying this video media can make it easier for participants, students, to understand the lesson material.

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INTRODUCTION

Technological developments are so rapid that teachers and students must be able to utilize electronic media as teaching materials in the classroom learning process. To obtain information nowadays, teachers and students can easily access everything via the internet. Technology is a means by which education in this world develops. Technology itself provides a way out in solving problems, especially in education, so that, without realizing it, the quality of schools and educators becomes better (Andrianus et al., 2023). As science and technology advance globally, the educational process becomes more advanced. Technology causes people to change over time, such as the way educators teach, the way students learn, and the material taught is continually updated (Fitri, 2021).

Education is closely related to school, where students can acquire various knowledge that can be applied in their lives. One of them is Natural Science (IPA), a science closely related to nature and its components. Science learning is not just about explaining theory because some characteristics of science material are abstract and cannot be seen directly. Therefore, science learning requires auxiliary media to enhance the quality of learning, so that learning objectives can be achieved.

According to Hidayat & Asri (2023), learning media is a means to bridge the learning process. Several types of learning media include audio, animation, text, video, and teaching aids. There are several reasons why learning media is considered an important factor that supports the success of teaching and learning activities, including: (1) increasing the attractiveness of learning, (2) clarifying abstract processes, (3) supporting various learning styles, (4) facilitating learning independently, (6) present contextual and authentic learning, (7) increase retention and understanding of material, (7) support collaboration and interaction, according to (Harefa et al., 2020).

Based on this, it is important to choose learning media that can provide students with solutions in learning activities. To facilitate the learning process, appropriate learning media are needed. Video media is a tool used by educators to facilitate student learning activities (Adiati et al., 2023). When explaining material during the learning process, teachers get various benefits from using video media. Material that is difficult for students to understand can be presented in a simple and understandable form through video media. Video media used in learning can attract students' attention in the learning process. Animated videos are considered quite interesting because they provide several advantages. Utilizing video media can provide a way for teachers to convey abstract and difficult-to-explain concepts, make students more focused, and make learning more enjoyable.

Teaching and learning activities are a real form of changing behavior in students (Samsuardi & Mahyiddin, 2023). Learning is a fundamental process in a person's life development, where knowledge, habits, hobbies, and attitudes are formed through various learning activities. Therefore, it is considered learning if a process of activity occurs within oneself, accompanied by the person's efforts, which in turn causes behavior to occur.

Learning outcomes are students' final abilities after going through the learning process. Teachers are required not only to deliver learning material to students but also to guide them as facilitators, ensuring that learning outcomes are achieved as formulated in the learning objectives designed at the beginning of the learning process (Novitasari, 2023). Learning outcomes will be related to learning achievement. Achievement is proof of a student's ability to carry out learning by meeting learning outcomes.

Based on the results of observations carried out at SMP Madani Depok, it was discovered that class VIII students at the school had difficulty understanding abstract subject matter. Learning systems that focus on teachers tend to place more emphasis on the material that must be taught, which will influence student learning outcomes. Since students cannot see the process and can only imagine it, they are less interested in learning. Learning that cannot help students understand abstract processes can lead to low learning motivation, which in turn affects learning outcomes. The use of video teaching materials will help the learning process in the classroom. Having video media

as a learning tool will make it easier for educators to convey abstract learning material more clearly. With these videos, learning will become more enjoyable, and students' attention can be focused on the learning conveyed by the educator. Thus, it will have a positive impact by increasing student learning outcomes.

METHODS

The type of research carried out is classroom action research. Classroom action research is research carried out to solve problems faced by teachers as evidence of learning management activities in the classroom. This classroom action research aims to improve and enhance classroom learning practices on an ongoing basis. It is hoped that this research will address existing issues and implement changes that improve the learning process in the future.

The learning activities took place at SMP Madani Depok on Thursday. The first cycle was carried out on October 31, 2024, and the second cycle was carried out on November 14, 2024. Researchers used class VIII (eight) in this class action research with science subjects. The implementation of classroom action research was carried out in two cycles using descriptive quantitative analysis methods, where data collection procedures were through interviews, observation, questionnaires, and tests. Indicators of success can be seen from the researcher's satisfaction with the results in the form of changes in the behavior of the students studied. The PTK model used by the researcher is based on the Kurt Lewin model with a two-cycle treatment using four stages, including planning, implementation, observation, and reflection, which can be seen in Figure 1.

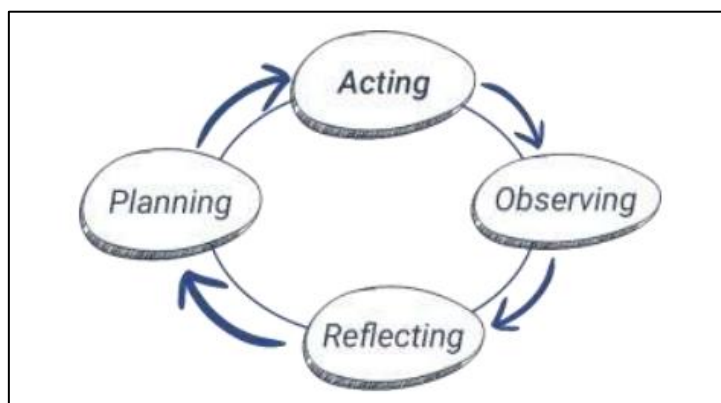


Figure 1. Kurt Lewin's PTK model cycle in Machali (2022)

This research can be concluded once the learning achievement indicator is met, specifically achieving 80% classical completeness with a minimum student completeness criterion of 75%. The implementation of this research action is by the following stages: (1) Developing a schedule for implementing the action, preparing a learning improvement plan, and resources related to the learning to be taught, (2) Facilitating supporting activities in the form of conducive classroom conditions and preparing video learning media that will be used.

In cycles I and II, the process was carried out through learning activities and research objectives, specifically aimed at improving student learning outcomes

through the use of video media. An overview of the learning process using video media in general science subjects that will be implemented, namely:

- a. The planning stage, which includes:
 1. Prepare a lesson plan
 2. Prepare research instruments
 3. Prepare learning resources
 4. Prepare the learning video media needed in the learning process
 5. Prepare LKPD and evaluation sheets
- b. In the implementation stage, these activities include:
 1. Learning is carried out using learning videos.
 2. Students are given an understanding of the material in science subjects through learning video media.
 3. Stimulate students to respond to educators' explanations, conduct questions and answers with students, explain the tasks that students must complete, and answer questions through the LKPD provided..
 4. Closing activity, where students and teachers together conclude the material
 5. The teacher closes the lesson
- c. Observation stage, in this activity, the research teacher observes student behavior in the process of learning activities, observes student understanding, and evaluates student learning outcomes
- d. Reflection stage, at this stage, the process of recording observation results, analyzing learning results, and recording any weaknesses that arise is carried out. The deficiencies and weaknesses identified in Cycle I serve as material for preparing the design for the next cycle, until the PTK objectives are achieved.

Data collection is essential in research, as the information obtained is used to answer the problem formulation and test the truth of the hypothesis. Data collection techniques can be done in several ways, including: (1) observation. This method involves examining the learning process that has been carried out. (2) Tests are measurement tools in the form of questions, instructions, and commands addressed to the tester to obtain appropriate results. The test used in this research was a written test regarding science lessons with material on elements, compounds, and mixtures. (3) interview, which is a technique used to obtain answers from respondents. (4) Documentation, this technique is to get a real and complete picture of class conditions. Documentation includes: learning improvement plans, teacher notes, performance scores, and photos of activities. The data analysis technique employed quantitative descriptive analysis to process data on student learning outcomes, aiming to determine the increase in learning outcomes and student completion in learning science through video media.

In this analysis, simple statistics can be used, namely as follows:

- a. To calculate the average understanding of elements, compounds, and mixtures classically using formulas:

$$X = \frac{\sum X}{\sum N}$$

X = Average value

$\sum X$ = the total score of all students

ΣN = number of students

b. Calculate the percentage of students' completeness

$$X = \frac{\Sigma T}{\Sigma N}$$

P = percentage of understanding

ΣT = number of students who completed

ΣN = number of students

RESULT AND DISCUSSION

This research was carried out in two cycles, namely Cycle I and Cycle II. This classroom action research provides significant results from student activities, including learning motivation and student learning outcomes. Implementation of Cycle I involves increasing lesson content in science subjects. There are 17 class VIII students. Researchers use four stages in each lesson, consisting of planning, implementation, observation, and reflection.

At this stage, the teacher begins by creating a learning plan and scenario together with the collaborating teacher. The scenario includes the steps taken in learning improvement activities. Teachers also prepare the necessary support facilities. Then, prepare several research instruments to be used in action through learning video media. The learning instruments and tools prepared include creating a learning improvement plan, Teacher Performance Assessment Tool 1 and 2, producing learning videos, designing student worksheets, and developing evaluation questions.

In carrying out activities in this learning, the researcher delivered the material that had been prepared. Cycle I will be held on Thursday, October 31, 2024. This stage begins with the teacher saying hello, inviting students to pray, then taking attendance of students and preparing the required learning tools. In the apperception activity, the researcher read out the learning objectives. In the core activities, the research teacher prepares learning videos, explains key material, conducts question-and-answer sessions with students, outlines the tasks students must complete, and distributes their worksheets. In the closing activity, students were allowed to ask questions about material they did not understand, and the research teacher and students provided conclusions.

The observation stage of the researcher involved observing the events that occurred during the learning process, including student behavior, student learning outcomes, and the learning process carried out by the researcher teacher. Based on the observations made, the learning process that took place was quite good. Students were very enthusiastic about participating in the learning process. The role of video media made students happy and enthusiastic about paying attention to learning. However, some students felt bored, which caused them to pay less attention to the lessons given, and some students had misconceptions about the topics of elements, compounds, and mixtures. The researcher conducted a question-and-answer session, and many students actively participated in answering. Students worked on student worksheets and evaluation sheets to assess the level of success of the learning carried out. The

results of the analysis in pre-cycle and Cycle I on the science learning test of students with a Minimum Mastery Criteria of 75 can be seen in Table 1.

Table 1. Analysis of pre-cycle learning outcomes

Grade	Frequency	Amount
10	2	20
20	2	40
30	6	180
40	2	80
80	5	400
Average Value		41.76

Based on the data in Table 1, before the action/pre-cycle, only five students could reach the minimum competency criteria, and 12 other people had not yet reached the minimum competency criteria value. The average score in pre-cycle activities is still relatively low, around 41.76.

After taking action in the first cycle by implementing learning using video media, there was an increase in student results. 11 students got scores above the Minimum Mastery Criteria. In comparison, six other students had not yet reached the Minimum Mastery Criteria. The research data can be seen in Table 2, the average score of students in class VIII after taking action is 70

Table 2. Analysis of learning outcomes in Cycle I

Grade	Frequency	Amount
20	1	20
30	1	30
40	2	80
60	2	120
80	6	480
90	5	450
Average Value		70

Table 3. Completeness activities for Cycle I students' learning outcomes

Assessment Criteria	Frequency	Percentage
Very Good	5	29.4%
Good	6	35.3%
Enough	2	11.8%
Not Enough	4	23.5%
Amount	17	100%
Completion Percentage		63.7%

In Table 3 of the first cycle, the results of student activities are presented. Looking at the number of students with scores above the Minimum Mastery Criteria, there are 11 students. Five students met the excellent criteria, accounting for 29.4%, and six students met the good criteria, accounting for 35.3%. The sufficient criteria are met by a score range of 60 – 70, with two students achieving a percentage of 11.8% and

four students scoring below 23.5%. By looking at the observation data, 11 of the 17 students have completed their studies, with a percentage of 63.7%.

At the reflection stage, the researcher evaluated the deficiencies that needed improvement. The researcher encountered challenges in enhancing learning, particularly among students who struggled to identify and distinguish between elements, compounds, and mixtures based on their characteristics, and to classify various substances into appropriate categories. The video duration was too long, causing students to get bored and lose focus. Reflection was carried out to identify deficiencies and formulate follow-up plans that could be carried out to improve student motivation and learning outcomes. Examining this percentage reveals that students have not met the expected learning outcomes of 80%. Therefore, improvements are needed in the next cycle.

In cycle II, the steps given are almost the same as the steps in cycle I. The difference between cycle I and cycle II lies in the planning and implementation. Cycle II planning is based on the results of reflection from Cycle I, so that deficiencies and weaknesses in Cycle I do not occur in Cycle II. The detailed implementation of cycle II is as follows.

After incorporating feedback from Cycle I into the Cycle II improvement plan, the teacher (researcher) prepared to implement Cycle II improvements, specifically by adding an explanation of how the video used presents reaction simulations, mixture separations, and molecular structures to enhance students' understanding. The topic of this learning is a continuation of the previous material, namely, elements, compounds, and mixtures. The same topic was chosen because there were still six students who had not been able to answer questions about elements, compounds, and mixtures, while the final goal was that all students could identify and distinguish between elements, compounds, and mixtures based on their characteristics and could answer at least 80% of the questions correctly.

At the implementation stage, the research teacher began implementing the revised plan, which was carried out on Thursday, November 14, 2024. Action learning in cycle II was a continuation of the action in cycle I regarding the use of video media in science learning. The implementation of learning in cycle II is almost the same as cycle I, by paying attention to the results of reflection in cycle I and adjusting the planning in cycle II. The learning steps in cycle II begin with the research teacher saying hello, inviting students to pray, taking student attendance, and preparing learning tools. Necessary for learning. The research teacher conveyed the learning objectives, displayed learning video media with material on elements, compounds, and mixtures.

In this activity, the teacher displays several videos, including animations that show one type of atom, animations of two or more types of atoms combining to form a compound, and the process of mixing. The videos are not too long, as students struggle to focus on the material, and some find the video display too lengthy. The teacher conducts questions and answers to students, gives assignments, and distributes student worksheets. In the final activity, students are guided by the research teacher to summarize and conclude the content of the material they have studied and are allowed to ask questions about the material they have not yet understood. Research teachers provide evaluation sheets for students to work

individually and submit to the research teachers. At the end of the lesson, the teacher asks students about today's learning, offers advice to help them stay enthusiastic and diligent in their studies, and concludes with a prayer, followed by the teacher's closing greetings.

In the observation stage of cycle II, observation took place during the learning process. In the learning process, students demonstrated the ability to identify and differentiate between elements and compounds, and to explain the definitions of atoms, molecules, and simple chemical bonds concerning the formation of elements, compounds, and mixtures. Based on the observation of the process that took place in cycle II, student learning outcomes increased. This can be seen in Table 4.

Table 4. Analysis of learning outcomes in Cycle II

Grade	Frequency	Amount
60	1	60
70	1	70
80	5	400
90	4	360
100	6	600
Average Value		87.6

Based on the data in Table 4, in Cycle II, the application of learning using video increased in terms of learning outcomes. Out of 17 students, 15 have scores above the Minimum Mastery Criteria, and the average score in science subjects has risen to 87.6.

Table 5. Completeness activities for Cycle II students' learning outcomes

Assessment Criteria	Frequency	Percentage
Very Good	10	58.8%
Good	5	29.4%
Enough	2	11.8%
Not Enough	0	0%
Amount	17	100%
Completion Percentage		88.2%

Table 5 indicates that the learning outcomes of students' activities in cycle II have increased. Of the 17 class VIII students, 10 students had excellent grades with a percentage of 58.8%, and five students had good grades, namely 29.4%. A total of 15 students completed the course, achieving a percentage of 88.2%. Meanwhile, two students had sufficient grades with a percentage of 11.8%.

The data collected in Cycle II shows a 24.5% increase compared to Cycle I. Notably, 17 students demonstrated improved learning. In contrast, 11 students achieved scores above the Minimum Mastery Criteria, representing 63.7% of the total in Cycle I. In cycle II, the number of students increased by 15, with scores above the Minimum Mastery Criteria, resulting in a percentage of 88.2%. Based on this data, the researcher determined that the learning activity did not require further revision, as the learning achievements had been completed.

After the planning, implementation, and observation stages were carried out, the research teacher re-analyzed the results and findings that had been recorded in the

observation sheet. The aim is to determine the increase in students' abilities and the completeness of their learning by mastering the material being studied. At the end of the second cycle of learning activities, the test results showed that 15 students achieved scores above the Minimum Mastery Criteria, accounting for 88.2%. In comparison, two students scored below the Criteria, making up 11.8%.

The percentage of students at SMP Madani who have completed their coursework has reached 88.2%. This indicates that the value obtained by students meets the minimum threshold targeted by researchers, eliminating the need for further learning improvements. The use of video media in science provides motivation and student learning outcomes, especially in Elements, Compounds, and Mixtures. Explanation of teaching material using video media, starting from students paying attention, activity, and positive interactions between students and research teachers, which causes students' motivation to increase

The use of learning media, particularly video, in the implementation of the learning cycle I remains impractical, with weaknesses and deficiencies still present. This is proven by the fact that there are still several students who get scores below the Minimum Mastery Criteria, namely 75, and 11 students achieved complete learning outcomes in the first cycle, with a percentage of 63.7%. The average student learning score improved compared to the pre-improvement plan treatment score, specifically from 70. Data obtained by the research teacher in Cycle I showed that the scores obtained by students still needed improvement, indicating a need for further learning improvements in Cycle II.

In cycle II, the results of learning completion in class VIII increased, indicating that students already had a solid understanding of the material on Elements, Compounds, and Mixtures in science subjects. Data from students who achieved scores above the Minimum Mastery Criteria showed 15 students, accounting for 88.2% of the total. Additionally, the average student learning outcomes increased to 87.6.

The learning improvement treatment using video media in cycles I and II has experienced an increase in both learning outcomes and student motivation in studying science subjects. In understanding science learning, a special approach is necessary to make the material easy for students to grasp. Additionally, science is a subject that conveys abstract theories and concepts. Hence, there needs to be the right media to understand it (Aliyyah et al, 2021). Learning media using video can provide students with a dynamic learning experience. Apart from that, videos can be accessed on various devices so that students can study them independently (Hidayat & Asri, 2023). The existence of video media in learning enables students to create learning messages through visualization, making it easier for them to remember and understand the material.

According to Siregar (2015), the use of video as a learning medium has a positive influence, especially on cognitive learning gains. Based on observations made by researchers, the use of learning videos not only influences student learning outcomes in the cognitive aspect but also influences the affective aspect.

Students' attention when using video media as a learning tool for science subjects is getting better. Students can focus and pay close attention to the video being played, and the use of video eliminates boredom for students who have only been listening to the teacher's lecture. Students have better attention to subjects, are

enthusiastic about the process, and appreciate each task given by the teacher more. This kind of attitude ultimately makes it easier for students to remember and understand the lesson material.

Based on the data presented above, it is evident that the use of video media in learning can serve as an alternative to overcome learning problems at SMP Madani Depok, particularly in science subjects such as elements, compounds, and mixtures. Science learning using video media can increase students' activeness, independence, and motivation in participating in learning, so that it has an impact on the desired learning outcomes. Learning videos are a very appropriate learning alternative for teachers to convey abstract concepts, making it easier for students to understand.

CONCLUSION

Based on data from research conducted at Madani Middle School, Depok, and the discussion in this research, it can be concluded that the use of video learning media can improve student learning outcomes and motivation, especially in elements, compounds, and mixtures. The scores obtained by students from each cycle have increased. Before the cycle or pre-cycle actions were carried out, only five students out of 17 students had achieved completeness, with a student completeness score of 29.4%, and the average student learning outcome was only 41.76. Cycle I has achieved completeness in the learning outcomes of 11 students, with a percentage of 63.75% and the average student learning outcomes reached 70. In cycle II, 15 students completed learning with a percentage of 88.2% and the average learning outcome rose to 87.6. In this way, this research has met the success criteria set by the author at 80%. Thus, it can be proven that there has been an increase in learning outcomes and student motivation after using video as a science learning medium in class VIII Madani Middle School, Depok.. From these findings, the author suggests that teachers can use video media as a tool in conveying learning messages. Given that this research was conducted in class VIII within science subjects, the researcher recommends employing video as a learning tool in class, utilizing diverse materials.

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