Implementation of Contextual Learning Videos to Improve Mathematics Test Results of Elementary School Students

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Implementation of Contextual Learning Videos to Improve Mathematics Test Results of Elementary School Students

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Abstract

This study aims to determine the implementation of contextual learning videos in improving mathematics test results for first-grade students in elementary schools. This research uses the Elliott model action research method. The action research was conducted on 20 first-grade public school students in Palembang, Indonesia. Based on the results of the study, it can be concluded that the use of contextual learning videos can improve mathematics test results of elementary school students. Thus the results of the study can be recommended to elementary school teachers to use contextual learning videos in the process of learning mathematics in elementary schools. In addition, contextual learning videos can also be used to facilitate the learning process in mathematics with the number of materials.

Keywords: *Contextual Learning Video and Mathematics Test Results*

1. Introduction

Mathematics is the queen in all aspects of life, especially in the field of Education. But the latest evidence from the Program for International Study Assessment (PISA) explains that mathematics competence increased in 2012 from 375 points to 386 points, in 2015 to 2018 it decreased to 379 points [1]. This evidence is supported by facts in the field, the results of interviews with first-grade students of elementary schools: "Students find it difficult to learn mathematics because learning is not fun". In addition, researchers distributed questionnaires to elementary school teachers in Palembang. Based on the results of a survey regarding the needs of elementary school teachers in the process of learning mathematics in the classroom it was found that teachers really need a learning media in the form of contextual learning videos [2]. The survey results illustrate that instructional media in the form of video is needed by the teacher in the learning process in the classroom. The findings inform our understanding of the teacher's role in providing mathematics learning that is interesting and beneficial for students [3]. Similar research results confirm that technology has a media effect on the effectiveness of primary school student learning [4]. There has been researched on video information retrieval in the last decade [5]. The findings show that students will refer to video instructions first before trying other forms of online instruction [6]. Primary and secondary school students have significantly higher grades when the target subject is integrated with technology [7]. In addition, environmental aspects must be considered such as the application of domain knowledge, conceptual theory, and evaluation of the overall quality of the environment that is designed so that instruction can be successful [8]. The learning video is segmented to strengthen the representation of procedures in memory for beginner learners and

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reduce cognitive load [9]. To further enhance learning, a better understanding of the learning process is needed [10].

Based on the above rationale, this study was conducted to obtain information about improving mathematics test results in first-grade elementary school students through the use of contextual learning videos. The solution found by researchers to overcome the low mathematical test results of students by using contextual learning videos. The implementation of learning videos is expected to have a positive impact on students to improve mathematics learning outcomes [11]. Based on some of the opinions above, implementing a contextual learning video is expected to be a solution in improving student mathematics test results.

2. Method

2.1. Research design

Action research uses the Elliott design model [12]. Action research aims to solve problems or improve existing conditions [13] and is able to improve student test results [14]. The study was conducted at Palembang Elementary School 127 Palembang in the odd semester of the academic year 2019/2020 located on Jalan Major Zurbi Bustan Palembang, Indonesia.

2.2. Respondents

Respondents in the study were first grade A students consisting of 20 students. Provision of action using contextual learning videos in improving student mathematics test results.

2.3. Instrument

The instrument used in this study was a student test sheet on a number of materials. Student test results in the form of simple or matching essays consisting of 10 questions. If the correct score is 1 and the score 0 if false.

2.4. Data analysis

Data collection in this study was obtained by holding a pretest and posttest. Pretest is used to measure initial ability before learning begins and posttest is used to measure student ability after learning is finished. Test results were measured using initial test scores, post-test cycle one, post-test cycle two, and post-test cycle three which were analyzed using the percentage formula. Students are considered to have reached the completeness criteria when they have achieved an average score above 70.

3. Results

The results of students' mathematics tests are given in four stages: (1) pre-cycle tests, (2) one cycle test, and (3) two-cycle tests, and (4) three-cycle tests. The recapitulation of the average score of the pre-cycle test, post-test cycle one, post-test cycle two, and post-test cycle three is presented in Figure 1 below:

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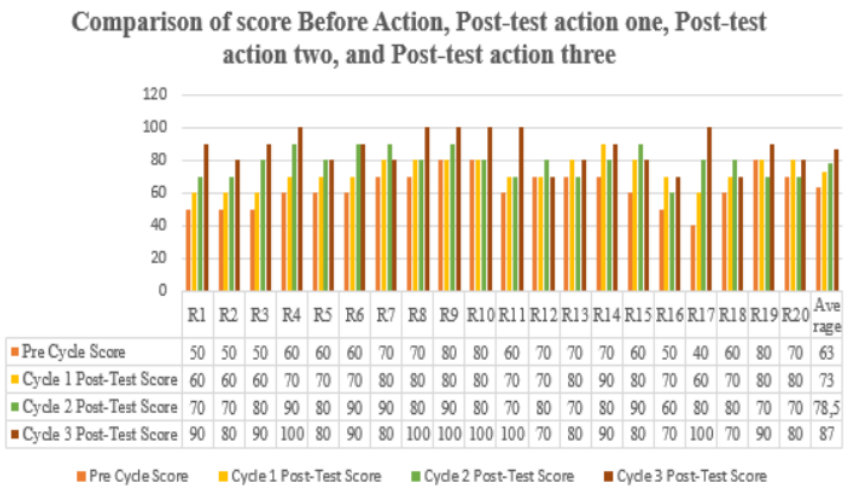

	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	Average
Pre Cycle Score	50	50	50	60	60	60	70	70	80	80	60	70	70	70	60	50	40	60	80	70	63
Cycle 1 Post-Test Score	60	60	60	70	70	70	80	80	80	80	70	70	80	90	80	70	60	70	80	80	73
Cycle 2 Post-Test Score	70	70	80	90	80	90	90	80	90	80	70	80	70	80	90	60	80	80	70	70	78,5
Cycle 3 Post-Test Score	90	80	90	100	80	90	80	100	100	100	100	70	80	90	80	70	100	70	90	80	87

Figure 1 Comparison of score Before Action, Post-test action one, Post-test action two, and Post-test action three

Figure 1 shows that the average score obtained by students on the results of students' mathematics tests before applying contextual learning videos to the mathematics learning process is 63. Based on the test results it is known that 11 students (55%) have not reached the minimum grade standard and as many as 9 students (45%) who have received test results above the minimum value. This shows that the percentage of students who have not received below-average math test results is higher than students who have received test results above the minimum value. Based on this, researchers and collaborators consider it necessary to apply the use of contextual learning videos to overcome these problems. Furthermore, based on the results of the first cycle post-test it was found that students who had not reached the minimum standard score of 4 students (20%) and who had obtained test results above the minimum score of 16 students (80%). In the first cycle, students' mathematics test results increase by learning to use contextual learning videos. In the second cycle, based on the results of the second cycle post-test it was found that students who had not reached the minimum standard score of 1 student (5%) and who had obtained test results above the minimum score of 19 students (95%). The improvement in the second cycle is very rapid, it is evident from the results of the mathematics test that only one student has not reached the minimum grade standard. The researcher intends to improve the mathematics test results of all first grade A students, so the third cycle continues. In the third cycle, based on the results of the post-test cycle three all students get test results above a minimum score of 20 (100%) students.

Next figure 2 shows the average of the achieved cycle starting from cycle one, cycle two, and cycle three.

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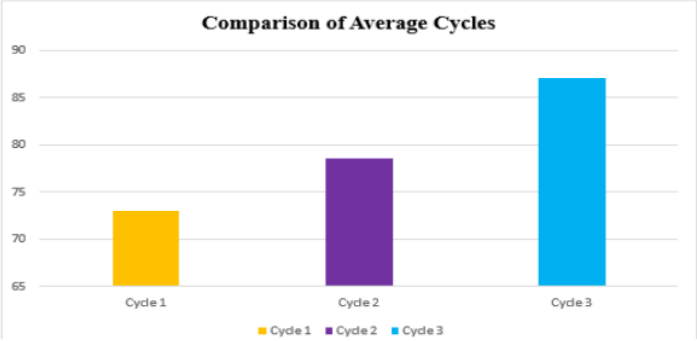

Figure 2 Comparison of the average of each cycle

Figure 2 shows that there is a significant difference in the average of a cycle consisting of tests of cycle one, cycle two, cycle three. Based on the test results it is known that an increase in the average score of mathematical test results in every cycle. The average score on cycle one was 73, the average of cycle two was 78.5, and the average of the cycle third was 85.5. Based on Figure 1 and Figure 2 above, there was a significant increase in the average score obtained by all students in the third cycle using contextual learning videos.

4. Discussion

The increase that occurs in each cycle explains that the use of contextual learning videos can improve student mathematics test results. The research subjects were 20 students in the class who had special needs students. However, when the learning process took place in the first cycle the students were still not maximized, but the results of the mathematics tests obtained increased in the second and third cycles. The application of contextual learning videos provides a positive response and impact to all students, especially students with special needs. The computerized program seems to be a promising new approach to collaborative learning as well as for people with cognitive difficulties [15]. Mathematical learning is related to the performance of early mathematics or children counting early, as the most important component since the beginning of counting and knowledge of quantity [16]. To find out whether students have understood the learning given, the teacher needs to do further testing by giving evaluation questions. Measuring the knowledge students have by doing more assignments is a pure benchmark of children's learning potential [17]. Learning videos are processed in-depth in the brain so that it can reduce the cognitive burden on students. In addition to cognitive video, learning is also able to provide an influence on social responses in students which leads to deeper cognitive processing and better test results [18] in learning and teaching mathematics specifically [19]. Schools that set priorities for technological support have better outcomes in the teaching and learning process [20]. In addition, elementary school students when learning to integrate technology and curriculum results are very good [21].

Contextual learning videos in the form of compact disks were prepared with the aim of enabling the development of hand-eye coordination, attention, children's perception skills, and also providing support from all areas of development and independent learning [22]. Making it easier for students to see objects that are manipulated, and students see together with the teacher to the assignment [23]. The teacher as an instructor/model has an important role in the classroom when applying contextual learning videos. In contrast to the results of the study, the presence of instructors on learning has less effect. In other words, instructional

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videos are not so dependent on the presence of teachers in the learning process in the classroom [24]. Activities can be applied in classroom settings, are effective in terms of learning and are attractive to students and lastly has the potential to emphasize collaborative learning supporting the cognitive aspects of learning [25]. Technology makes the learning environment more active and more interesting [26]. The findings of this study indicate that the results of students' mathematics tests in cycle one mean score of students' mathematics test results is 73. Furthermore, the average score of students' mathematics test results in cycle two is 78.5. Significant improvement has been shown in the second cycle but the researcher wants to see more about the use of contextual learning videos in mathematics learning so that it has a positive impact on the results of elementary school students' mathematics tests. Proven in the third cycle, the average score of students' mathematical test results obtained in the third cycle is 87. Because the results of the mathematics test are very good, the researchers stopped in the third cycle and did not continue the next cycle. Based on data obtained from cycle one, cycle two and cycle three it was concluded that the results of students' mathematics tests could be significantly improved by applying contextual learning videos to the process of learning mathematics in first-grade elementary schools.

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