The Implementation of CPS Learning Assisted with Problem Cards on The Ability to Solve Story Problems

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Article Info	Abstract
	The purpose of this study is to obtain the ability of students in solving to solve story problems that fulfill learning (Creative Problem Solving) CPS assisted with problem cards is completely more than 75%, the ability to solve story problems that obtain CPS learning assisted with problem cards is better than classes that get learning using an example non-example type cooperative model, and to describe of the ability to solve student story problems. The type of research is quantitative descriptive with a quasi-experimental design. The research sample was all grade IV Public Elementary School Sekaran 01 Semarang. Data collection methods use tests and interviews. Quantitative analysis techniques include the completeness test and the average difference test. Finding shows that students who obtain learning with the CPS learning model assisted with the problem card media reach the ability to solve the story questions more than 75%, that is 90%, students who have the ability to solve story problems that obtain CPS learning by problem card media is better than students who obtain learning with the example-non-example type model, and students with the ability to solve high and medium criterion story problems are able to solve story problems with the four Polya steps, but students with the ability to complete medium criterion story problems have not yet written units, while students with the ability to solve low story criterion problems are still confused in distinguishing steps; plan, implement and recheck.

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INTRODUCTION

Mathematics is an important subject to be studied starting from the level of basic education to university. There are five learning objectives of mathematics, they are (1) logical thinking, (2) solving problems in daily life, (3) recognizing patterns of relationships and generalizing experiences, (4) developing creativity, and (5) raising awareness of cultural development (Fahradina, Ansari, and Saiman, 2014). This means elementary students are required to have problem-solving skills.

Problem-solving in schools is usually realized through the matter of stories that relate to everyday life. In line with the opinion of Yuwono, Supanggih, and Ferdiani (2018), which explains that the story problem is one type of problem that presents problems related to daily life. Resolving story problems involves four stages, they are (1) understanding the problem, (2) planning, (3) carrying out the plan, and (4) re-examining (Hutahaean, Sutawidjaja, and Susanto, 2016). Students can be said to be able to solve story problems if they have taken all four steps (Fajariah, Dwidayati, and Cahyono, 2017).

Based on the observation of the fourth-grade students of SDN Sekaran 01, Gunungpati Semarang City, some students did not understand the information about the story, while working on the story, the students were not accustomed to writing what was known and asked from the questions. Besides, students also have not written the steps to solve the problem but directly calculate. After finding the answers, students immediately believe if the answers they find are true and right without making any connection with the information that already exists in the problem. Students are also not accustomed to writing down the units used in the questions.

The problems in the fourth grade SDN Sekaran 01 have been attempted by the teacher by applying the example-non-example learning model, but have not been able to solve the problem. Therefore, this research applies a Creative Problem Solving (CPS) model. CPS is effective in overcoming problems in solving story problems (Permata, Sukestiyarno, and Hindarto,

2017). This opinion is in line with the opinion (Pepkin, 2004), which explains if CPS is a learning model that focuses on teaching and problem-solving skills followed by skills.

CPS has advantages such as learning models based on general problem-solving. Another advantage of CPS is that it can foster student curiosity to solve problems, increase student learning activities, and can help students develop knowledge (Asikin, and Pujiadi, 2008). CPS provides opportunities for students to develop interest continuously. Besides, students can apply mathematical knowledge in everyday life.

The selection of the right media following the characteristics of students and the material greatly impacts the learning. Learning media are all things that can be used as channeling messages and can stimulate the thoughts, feelings, concerns, and desires of students to learn (Suryani, Sugiarto, and Alamsyah, 2013). If students are interested in learning, the learning objectives will be maximally achieved.

At the time of learning that leads to the story questions, the teacher of Class IV of Public Elementary School Sekaran 01 Semarang usually directly asks students to work on the questions in the worksheet not yet using the media. That way, students feel bored to read story questions. If the problem is left alone, then another problem will arise. For this reason, innovative learning media are used to attract students' attention and interests. In this study, selected learning media in the form of problem cards. It is in line with the opinion of Afriyani, Chotim, and Hidayah (2014), which state that the problem card media is effective for problem-solving.

The area and circumference of 2-D problems are one of the materials studied in class IV semester 2. However, this study only focuses on a flat rectangular and rectangle. Minimum Completeness Criteria (MCC) of completing story questions is 70. The students' lack of understanding in solving story problems results in many students getting grades below the MCC.

Based on the background that has been described, the objectives of the study are (1) to obtain the ability to solve story problems so that

CPS learning outcomes by using problem cards is completely more than 75%, (2) to gain the ability to solve story problems that obtain CPS learning by problem cards media is better than classes that obtain learning using the example-non-example cooperative type model, and (3) to describe the ability to solve student story questions on CPS learning assisted with high, medium, and low criterion card questions.

METHODS

This research is descriptive quantitative research, with quasi-experimental design type. Quantitative research is to determine the effectiveness of CPS learning assisted with problem card media and to describe the ability to solve story problems based on high, medium and low criteria for CPS learning assisted with problem card media. The study was conducted at Public Elementary School Sekaran 01 in Gunungpati, Semarang City. The study population is all grade IV students of Public Elementary School Sekaran 01 consisting of class IV A and IV B. Class IV A who obtained example-non-example type learning, while IV B learning with CPS was assisted with problem card media.

The source of the data of this study was obtained from the results of the pre-test and post-test of the ability to solve the story questions and interview sheets. The research instruments used included lesson plans, syllabi, tests of ability to solve story questions, and interview guidelines. Before being used, the instruments were first analyzed for eligibility. Expert validators; lecturers and teachers validated each research instrument.

Analysis of the data used includes the completeness test and the average difference test.

Indicators of solving story problems include understanding the problem, making plans, carrying out plans, and checking again (Argarini, 2018).

RESULTS AND DISCUSSION

Completeness Test

The completeness test of the ability to solve classroom story questions that obtained CPS learning by problem cards media obtained $z_{value} = 1.89$, which means 1.89 > 1.64 or it can be said $z_{value} > z_{table}$. Based on the calculation results, it can be concluded that H_0 is rejected and H_1 is accepted. It means that students who get CPS learning aided by problem cards media reached the Minimum Completeness Criteria (MCC) more than 75%. This is in line with opinions of Maftukhin, and Dwijanto (2014) in explaining the ability to solve story problems can achieve classically completeness of more than 75%. Also, the opinion of Azmi, Wardono, and Cahyono (2018) which states that by implementing CPS learning it can achieve 75% of completeness. Mulyono, Wati, and Amidi (2019) stated that the ability to solve problems with the media card could reach MCC. This is in line with Isrok'atun, and Tiurlina (2015) research, which states the application of the CPS model can reach MCC.

Test of Average Difference of Ability to Complete Story Problems

The average difference test is used to find out the differences in the ability to solve story problems of students who get CPS learning assisted by card media and class with example-non-example type learning. Grouping the post-test results of the ability to solve story problems can be seen in Table 1.

Table 1. Grouping Ability to Solve Story Problems

Class	Criteria	Amount of students	The Ability to solve story problems	
			Average	Standart deviation
Experiment	High	4	94	2.4
	Medium	24	82	4.8
	Low	3	53	10
Control	High	4	78	0
	Medium	17	72	6.9
	Low	6	53	6.5

Testing the average difference using SPSS version 16. The results can be seen in Table 2.

Table 2. Test of Independent Sample t-test Pre-test

$\bar{x}_1$	$\bar{x}_2$	t_{value}	t_{table}	Criteria	Conclusion
80.73	64.27	5.465	2.001	$t_{value} > t_{table}$	H_1 is accepted

Table 2 shows that the average score of the post-test ability to solve class story problems that obtained CPS learning assisted with problem cards media is 80.73, while those who obtained example-non-example type learning is 64.27. The average difference test results obtained is that t_{value} = 5.565 while t_{table} = 2.001. It can be concluded that $t_{value} > t_{table}$, which means the average ability to solve story questions of students who get learning with the CPS model assisted by the problem card media is more than the average of students who learn using the example-non-example type. This result is in line with the opinion Novitasri (2015) which states that the ability of students with the CPS approach is better than students who get conventional learning. Furthermore Afriyani, Chotim, and Hidayah (2014) state that the problem card is effective in the ability to solve problems. Azmi, Wardono, and Cahyono (2018) state that students who received CPS learning had good completeness.

Ability to Complete High Criteria Story Questions

When students are given a problem, "A rectangular floor with a side length of 6 m. The floor will be installed rectangular tiles measuring 30 × 30 cm. How many tiles does it take to cover the floor entirely?". The results of the work of students can be seen in Figure 1.
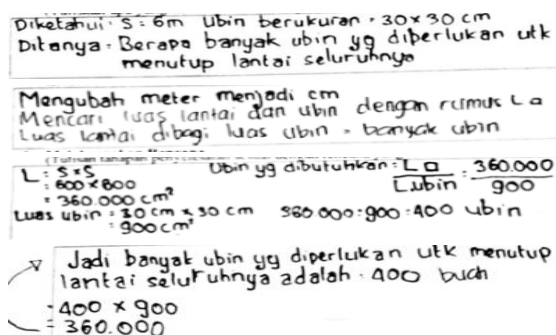
Figure 1. The Results of Ability to Solve Story Questions of Students in High criteria

Figure 1 shows that students who can solve high story problems have been able to write information contained in the problem, write questions, compile steps of completion, confirm the results of calculations with existing data, and have been able to make conclusions following the problem. Besides, students with the ability to solve high story problems have written down the units used in the story questions.

The results of tests of ability to solve the results of interviews support story questions. Students can explain adequately and accurately from the beginning to the end of what they write on the answer sheet. This shows that the correct results they wrote were the results of their findings.

Ability to Complete Medium Criteria Story Questions

When students are given a problem, "Mr. Sobirin garden is square with a side length of 65 m. Around the garden will be planted kapok trees as a barrier. If the planting distance between trees is 4 m and the price of seedlings is one kapok tree IDR 7,500.00. How much money does Mr. Sobirin have to pay to buy kapok tree seeds?". The results of the work of students can be seen in Figure 2.

Figure 2 shows that students who can solve story problems are already writing information contained in the questions. Students have not written questions, but have compiled completion steps. Students do the calculations according to what they have planned and confirm the results of the calculations with the data in the questions. Students have made conclusions but are not following the problem. Besides students with the ability to solve story problems are not writing units.
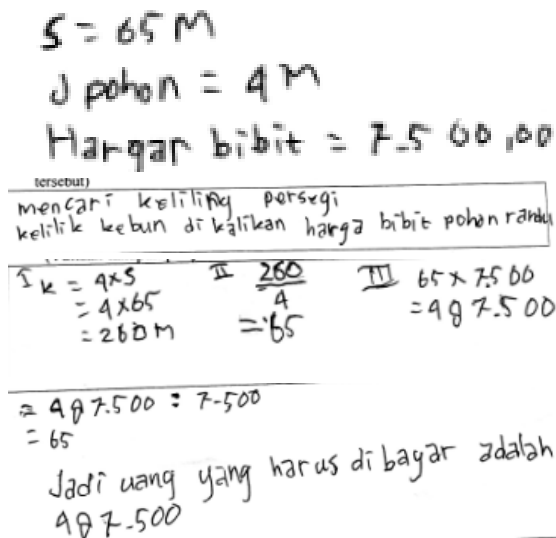
Figure 2. The Results of Ability to Solve Story Questions of Students in Medium Criteria
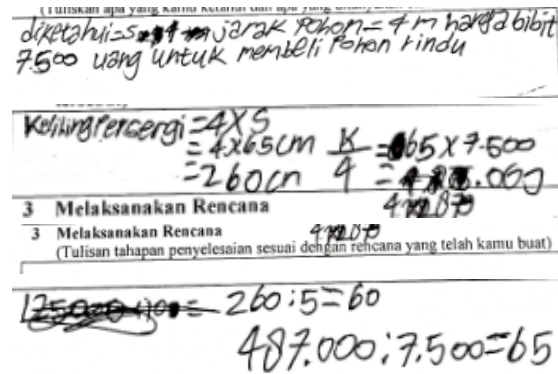
The results of the test of the ability to solve the results of the interview support the story questions. A student explains again related to the results that he did well, but there are several stages missed. He explained if he forgot to write the question. This shows that students have been able to solve story problems with the four Polya steps but need more precision. This is in line with the opinion of Vilianti, Pratama, and Mampouw (2018), which states that highly capable students can pass all stages of Polya.

Ability to Complete Low Criteria Story Questions

When students are given a problem, "Mr. Sobirin's garden is square with a side length of 65 m. Around the garden will be planted kapok trees as a barrier. If the planting distance between trees is 4 m and the price of seedlings is one kapok tree IDR 7,500.00. How much money does Mr. Sobirin have to pay to buy kapok tree seeds?". The results of the work of students can be seen in Figure 3.

Figure 3 shows that students who can solve low story questions have written down the information contained in the questions. In the steps of planning, students have to do the calculations without compiling the steps first. That way, the implementation stage looks blank without writing. The last step is checking again,

students do the calculation, but there is no connection with the data. Students have not concluded the results of the completion and have not written the unit.

Figure 3. The Results of ability to solve story questions of students in low criteria

The results of the test of the ability to solve the results of the interview confirm the story questions. When students are asked to explain again, they look confused. Students admitted that they were still being assisted by their friends while doing their work. This shows that students have not been able to solve story problems with the four Polya steps. Vilianti, Pratama, and Mampouw (2018) states that students with low ability cannot pass all stages of Polya.

CONCLUSION

Based on the results and discussion of the ability to solve story problems in the CPS learning model assisted with the problem card media, it can be concluded that students who obtain learning with the CPS learning model assisted with the problem card media reach the ability to solve the story questions were more than 75%. Students who can solve story problems that obtain CPS learning by problem card media were better than students who obtain learning with the example-non-example type model. Students with the ability to solve high and medium criterion story problems are able to solve story problems with the four Polya steps, but students with the ability to complete medium criterion story problems have not yet written units, while students with the ability to solve low story

problem questions are still confused in distinguishing steps; plan, implement and recheck.

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