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IMPLEMENTATION OF KAHOOT-ASSISTED PROBLEM-BASED LEARNING MODEL TO IMPROVE NUMERACY SKILLS: A CASE STUDY OF FRACTIONAL MATERIALS

Gunawan[1*], Nalim[2], Sinta Puji Rahayu[3], Jaka Wijaya Kusuma[4]
[1,3]Universitas Muhammadiyah Purwokerto, Banyumas
[2]UIN KH. Abdurrahman Wahid Pekalongan
[4]Universitas Bina Bangsa
Email: gun.oge@gmail.com

Abstract
Numeracy skills are an important component of 21st century learning and are a reference in PISA results. This research aims to improve numeracy skills in fractional materials through a problem-based learning model assisted by kahoot media. The subject of the study was a grade VI student of SD Negeri 3 Karangtengah. The research method applied is class action research. The research was carried out in two cycles, each cycle consisting of two meetings. Each meeting consists of 4 stages, namely planning, implementation, observation/observation, and reflection. The research instruments used were numeracy skills tests and observation sheets on learning implementation. The data analysis technique used in this study is quantitative by analyzing the increase in the cycle of the numeracy test and learning observation sheets. The results of the study show that the application of the problem-based learning model assisted by kahoot media can improve students' numeracy skills. This condition is evidenced by the results of the numeracy skills test in the implementation of the first cycle, obtaining an average score of 78.75% then increasing in the second cycle by 80%. The results of the research provide scientific and practical contributions on learning innovations that are encouraging and support the improvement of learning outcomes, especially numeracy.
Keywords*: Mumeration skills, Kahoot media, problem-based learning.*

INTRODUCTION

Mathematics has an important role in learning the subjects taught in schools. The abilities that students must have in the 21st century are problem-solving, reasoning, connection, communication, and representation (Indarwati et al., 2024). The presentation of mathematics materials can be related to students' daily lives, so that they are able to find concepts and develop their mathematical skills, especially numeracy skills, so that they can solve problems that exist in daily life. According to Astutik (2022), mathematics learning can train students' mindsets, student behavior, and students' skills to master problems so that they are always used to solving problems. However, in reality, the numeracy skills of students are still relatively low. In fractional form material, students often have difficulty in understanding problems, especially contextual problems.

Mathematics learning, especially in the scope of numbers learning material, including multiplication and division of fractions and decimals, there are still several problems experienced by students. Students at SD Negeri 3 Karangtengah, especially grade VI (six) have low numeracy skills. Students have difficulty in understanding the concepts in fractions and fractional forms due to their abstract nature. This is evidenced by the results of observations in grade VI students, where when students are given story problems on multiplication and fraction division material, there are still some students who have difficulty understanding the content of the story questions. Some students still have difficulty in analyzing the information displayed in the story questions that are still related to daily life.

In addition, based on the observations that the author has made, the author found several problems, namely the teacher's learning model is less varied, students are less involved overall during the learning process, both student interaction with teachers and fellow students so that students are less active in participating in learning, and students are also less active when working together during the group work process. Thus, there is a need for teachers' efforts to reform so that students' numeracy skills can increase.

One of the learning models that can be applied in order to hone critical thinking to solve a problem is the problem-based learning model (Boangmanalu et al., 2023; Kulsum, 2023). The application of the problem-based learning model is one of the right alternatives in developing students' thinking skills, because learning can be associated with daily problems (Masliah et al., 2023). In addition to using the problem-based learning model to create learning innovations, especially in mathematics subjects, teachers can also create new ways to teach by utilizing technology in the learning process and other innovations (Nisa, 2023; Rachman & Nuriadin, 2022; Yustitia & Kusmaharti, 2024). The PBL model has also been proven to increase students' learning activity and numeracy skills (Putri et al., 2023; Samad & Nur, 2024). Teachers can use interactive media to arouse students' enthusiasm to be more active in following the learning process. One example of web-based interactive media that can be used is Kahoot media. According to Setiawan and Soeharto (2020), kahoot is made as a more interesting learning medium by utilizing technology and is very suitable for students who want to learn with modern methods and are able to increase learning motivation so that they can get good learning results. Based on the background of the problem that has been explained, the problem formulation that can be written is "Can the problem-based learning model assisted by Kahoot media improve students' numeracy skills in fractional materials?".

METHOD

The type of research is class action research. This research is collaborative, where the researcher carefully prepares starting from planning, carrying out research, analyzing data, and reflecting on the results (Hamdayama, 2022: Ardiawan & Wiradnyana, 2020). Classroom action research aims to improve the learning process in order to improve students' numeracy skills (Yudiana et al., 2024). The researcher used the class action research model applied by Kurt Lewin in Sari et al., (2024) which describes the research procedure using the following steps of planning, implementation, observation, and reflection. The implementation of the research was 2 cycles with each cycle consisting of two meetings.

Accurate and precise data collection techniques will make it easier for researchers to conduct systematic research. The techniques used include observation. In Susilo et al., (2022) explained that observation is an observation activity when conducting class action research. Observations can be made by the teacher himself or by other teachers and are usually emphasized during the learning

process and actions. Observations were made by researchers to find out student activities in participating in the learning process using observation sheets. The instrument is in the form of an observation sheet containing indicators in the form of statements that should be carried out in the learning process. The observation sheet was used to determine the extent of the implementation of learning with the PBL model measured by learning syntax with the help of kahoot. The next technique is a numeracy skills test. The test consists of three description questions, each of which is arranged based on numeracy skills indicators. Tests are given to students at the end of each cycle. The last technique is documentation. According to Susilo et al., (2022) stated that documentation is something written or printed that is used as a record or evidence. The document in question can be in the form of written, visual, or monumental products produced by a person. The form of documents in research can be in the form of writing, images, and videos. Document techniques are carried out by collecting data and analyzing documents such as student data, photos, and LKPD during learning.

After the data is collected, the data analysis carried out is quantitative, namely analyzing the results of the numeracy skills test improvement from the first cycle to the second cycle. The data is presented in the form of tables or diagrams so that it is easier to identify whether there is an increase or not. This class action research achievement indicator illustrates the improvement of numeracy skills in each cycle. If the research indicators reach a completeness score, it can be concluded that this research is successful with a minimum completeness value of 65. The skills of students to understand and analyze problems in the form of story questions about fractional material is a skill used in this study.

RESULTS AND DISCUSSION

Classroom action research consists of two cycles, namely cycle I and II. The following are presented the results of each cycle of research.

Cycle I

The increase that occurred in the first cycle can be seen from the students' activeness in group discussions, students seemed more enthusiastic in working on the problems presented with kahoot media. The students seemed to be trying with their group members to answer the question. Even some groups are seen using strategies or sharing tasks in working on the questions, such as there are students who analyze and understand the meaning of the questions, after that there are students who start to count and work on the questions, and there are students who choose the answers on the kahoot application on smartphones. The conditions that occur in the classroom look much better. This is an indicator of an increase in students' skills to understand numeracy problems during learning, considering that during the pre-action students seemed passive and hesitant to answer questions given by the teacher which allowed students to still be confused in understanding numeracy problems. With kahoot media used during the learning process, it shows the response of students who seem happy because of the media, students are helped in understanding the instructions in working on student

worksheets (LKPD). In the LKPD, numeracy questions are presented. Figure 1 below shows the grades students get after working on the LKPD in a group:

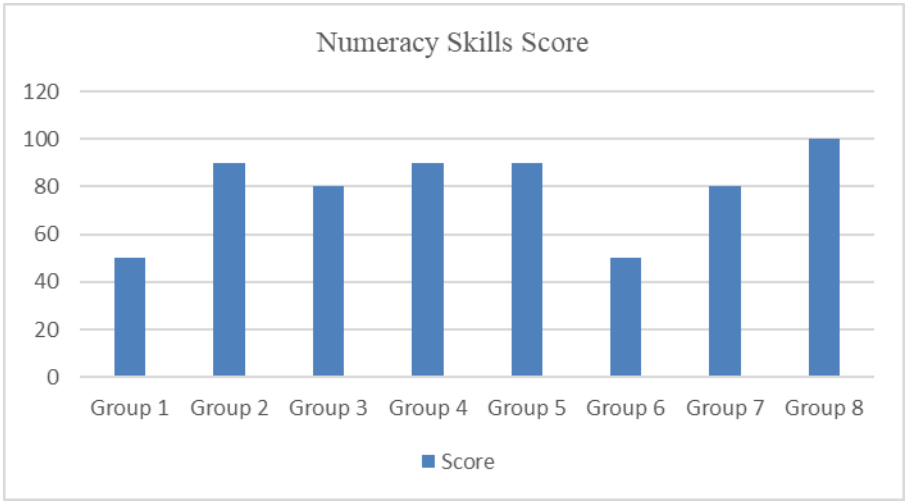

Figure 1. Recapitulation of Numeracy Skills Values in Cycle I

Based on figure 1, it was obtained that the percentage of average scores of numeracy skills showed a figure of 78.75%, which means that research in the first cycle can be declared successful in improving students' numeracy skills using the problem-based learning model with kahoot media. The results of the reflection of the first cycle provide information that the students' abilities in the first cycle are quite successful. This is because some students can already understand and analyze problems in the form of story questions about fractional material. In addition, the implementation of the first cycle has shown changes in attitudes that occur in students, including student participation in the implementation of learning using a problem-based learning model to improve students' numeracy skills has begun to be seen if compared to before, students look disciplined when working on LKPD-Group through kahoot media, students seemed happy during the learning process, students worked together to find information and solutions in solving problems, and some students began to improve their numeracy skills, especially in fractional materials.

Cycle II

Observations in this study were carried out to find out the behavior of students and teachers during the learning process. The learning process in cycle II discusses the material for the division of fractions. Similar to cycle I, learning practice is focused on practicing problem-based learning steps in accordance with theory as a reference, namely the following: helping students to understand numeracy problems, helping students to plan solving numeracy problems, guiding and directing students to solve problems in the form of numeracy problems through a problem-based learning model in groups, and reminding students to carefully check every Steps to solve numeracy problems. Observation activities were carried out carefully by researchers and teachers using observation guidelines and field notes that had been prepared beforehand. The researcher made observations by observing the ongoing learning process and observing the results of the students' LKPD. Figure 2 below presents the results of students' numeracy skills from the results of working on the LKPD in groups.

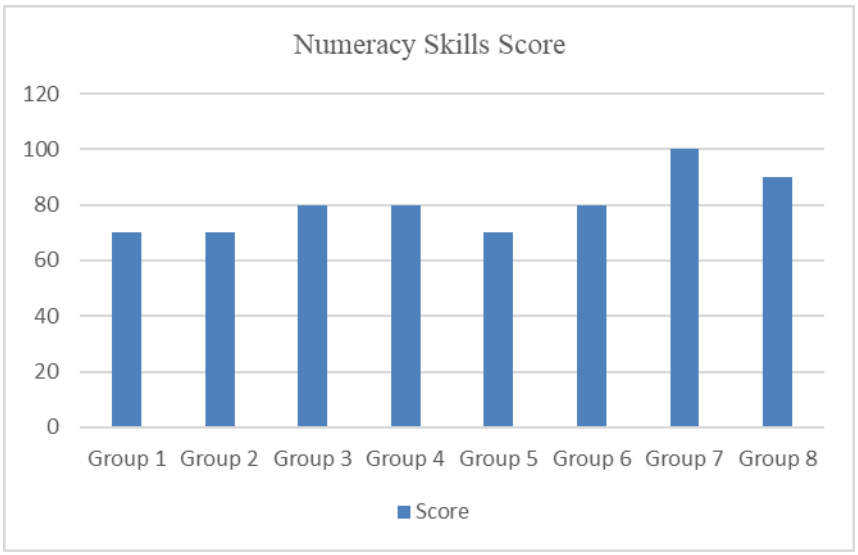

Figure 2. Recapitulation of Numeracy Skills Value Cycle II

Based on figure 2, it is obtained that the average score percentage shows a percentage of 80%, meaning that the research in cycle II can also be declared successful in improving students' numeracy skills using the problem-based learning model with kahoot media. The results of the learning process in the second cycle have improved well from the first cycle. This shows that they are more knowledgeable in analyzing and solving numeracy problems in the form of story problems. In addition, student participation in participating in the learning process is also increasing. Students looked enthusiastic in participating in the learning process and seemed disciplined during the LKPD process through kahoot media. Students looked morehappyand happy while participating in the learning process in the implementation of cycle II. Based on both tables 1 and 2, it can be proven that the comparison of cycle I and cycle II can be proven. In cycle I the average value obtained was 78.75% and in cycle II the average value obtained was 80%, meaning that there was an increase that occurred from cycle I to cycle II of 1.25%. In line with the research of Masliah et al., (2023) and Wijayama (2023) explained that the PBL model has advantages in presenting everyday problems so that it can encourage the improvement of students' numeracy skills. Furthermore, research conducted by Rahmah et al. (2023) and Lee-Post (2019) similarly explains that students' numeracy skills can be improved using PBL models that integrate contextual problems. Research by Iswara et al. (2022) innovated in the form of a problem context that combines local culture or ethnomathematics in PBL learning. This makes learning more interesting and closer to the cultural life of students so that students are able to solve problems that result in increased numeracy skills. The following Figure 3 visually proves the increase in numeracy skills from cycle I to cycle II.

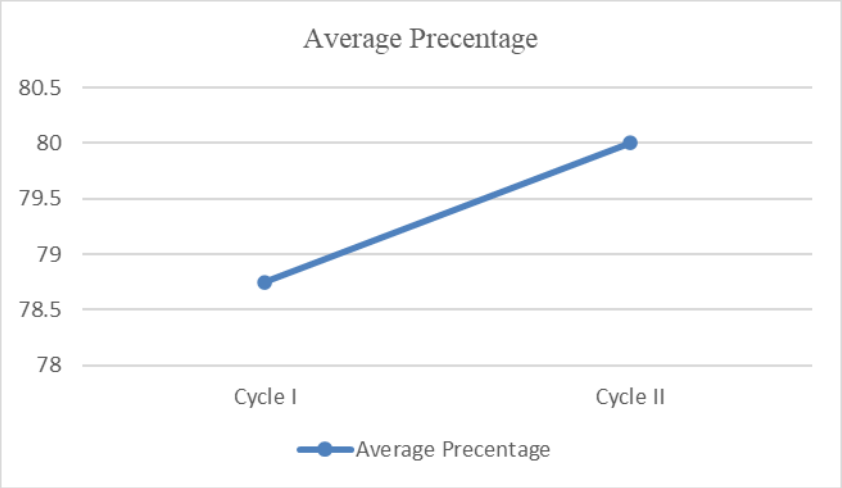

Figure 3. Improvement of Numeracy Skills Every Cycle

CONCLUSION

The results of the study provide a conclusion that the problem-based learning model is assisted by kahoot media to improve numeracy skills in fractional material of grade VI students of SD Negeri 3 Karangtengah. This can be seen from the value of numeracy skills obtained by students through the LKPD work. The acquisition of LKPD results from cycle I to cycle II has increased. The percentage of average scores obtained in the implementation of the first cycle was 78.75% while in the second cycle it was 80%. The data shows that the achievement indicators in this study were achieved, which means that the application of the problem-based learning model assisted by kahoot media is able to improve numeracy skills in students' fractional materials.

The research still has several limitations, including that students are still limited to one school with a limited number, the material used is limited to multiplication and division of fractions, and the variables used are also still limited to the cognitive aspect, namely numeracy skills, which means that other affective aspects can be added. The next research that can be done is to increase the number of subjects involved, for example, two different schools but still the same class. In addition, other variables can be added that are improved such as confidence.

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