Learning mathematics through media scales of lamps from used goods

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Abstract. This study aims to determine the learning of mathematics through light scales media from used goods. Students' understanding of weight comparison is still experiencing difficulties. Teachers have tried to make improvements through learning methods, but only 20% of student learning outcomes have been completed. Therefore, researchers conduct action research studies in the form of treatment for learning media applications. The research subjects were 30 first grade students. Data collection techniques in this study are through observation, tests, and documentation. The results of the study prove that the use of lamp scales media of used goods in mathematics learning that is in the initial conditions, 24 students have not reached skills, but in the first cycle, the number of students who have not reached mastery decreased to 15 students and in the second cycle all students have reached completeness. This study concludes that the use of media scales lamps from secondhand goods can develop mathematical learning understanding, especially in the theory of weight comparison.

1. Introduction
The basic problems, especially in elementary school, include 3 things, especially in the early grades of students namely: reading, writing, and mathematics [1,2]. For example, in Bekasi more than 30%, elementary school students in the class I semester 1 have not been able to master the mathematics Minimum Criteria Of Mastery Learning. So this problem must be resolved immediately, especially to help students in this early class master the basics of mathematics and arithmetic, this problem has been explained by Ann Le Saga in her research: the effect of teacher knowledge on student achievement broaden this position, concluding that the combined influence of teacher mathematical content knowledge and pedagogical content knowledge more strongly correlate with student achievement than any other moderating factor, including socioeconomic and language status [3].

So far, mathematics learning that takes place in Class I still uses simple media, namely a teacher presents pictures through the blackboard only. Students have never presented real media. This causes students to be less active, students cannot visualize perfectly and without any updates from the teacher to improve students. The teaching and learning process is essentially a communication process [4,5], that is the process of delivering messages from learning sources through certain channels or media to the recipient of the message [6–8]. The use of media, especially in primary schools, is an effort to help make the material delivered more easily understood by students, both in groups and individually.
Overcoming this case the use of tools used in this study is to display, present, present, or explain the material to students, which tools themselves are not part of the lessons given. Media types can be grouped from different aspects, for example (1) of material, in the form of print and non-print media, (2) of impressions, in the form of projection and non-projection media, (3) of electricity, in the form of electronic and non-electronic media. The tools can be in the form of all forms of boards (writing or pasting), all forms of printing (books, worksheets, and modules), all forms of electronic materials (Computers / Laptops, Projectors, Internet, and Films), as in Figure 1 below:

![Figure 1. Lamp scales media from used goods.](image)

The use of instructional media in the learning process provides positive meaning [9-12] in improving the quality of education in Indonesia, so that the function of the use of instructional media in the teaching and learning process as follows: 1) Laying a strong foundation for thinking; 2) Enlarge students’ attention; 3) Making lessons more stable or easier not to be forgotten; 4) Provide real experience, which can lead to business activities on their own; 5) Cause critical thoughts and continue; 6) Help understanding arise; 7) Very interesting interest in learning; 8) Encourage students to ask questions and discuss, and 9) Saving teacher learning time.

Through the media of scales of lamps from used goods, mathematics learning is able to provide a very detailed, innovative, and creative understanding in adjusting the level of development, competency goals in basic competency standards, and the contextual characteristics of students' daily lives. In the implementation, the teacher's task is only as a facilitator, while students actively construct their own knowledge, skills, and attitudes.

Some of the results of previous studies that the use of instructional media is very helpful for students in understanding and improving the quality of students in the learning process, especially in learning mathematics [13-15], because in learning mathematics must be able to utilize direct and indirect objects as a medium used in learning. Direct objects are objects which in terms of their form are the objects that were first studied. The direct objects in mathematics learning consist of: mathematical facts, mathematical concepts, mathematical principles. Indirect objects are objects which in terms of their real form do not immediately appear that the objects are things learned; but they are learned as a result of the learning of direct objects. Indirect objects in mathematics learning are: attitudes towards mathematics, respect for the role of mathematics for human life, ability to solve problems, accuracy or accuracy in observing things, the ability to think abstractly, and so on.

Based on the problem in the research above, the title in this study is the learning of mathematics through the media scales of lamps from used goods. So that the formulation of the problem that must be considered is whether the media can be scales from used goods to develop the concept of understanding and improving the quality of learning outcomes, especially in learning mathematics. So, the goal achieved in this paper is to find out the scales of used goods in developing the concept of understanding and improving the quality of learning outcomes, especially in learning mathematics.
2. Methods
This type of research is action research [16,17], with the subject of research in first-grade students at the Primary Education UPT Pondokgede District Education Office in Bekasi City with a total of 30 students consisting of 15 male students and 15 female students in 2019/2020. Data collection techniques used in this research are; test techniques are used to collect data on the results of tests at the end of each action to obtain data about students’ understanding and success rates for weight comparison of two objects, and observation techniques used to observe teacher and student activities. Implementation This observation technique aims to (1) find out the compatibility between the implementation and improvement, (2) find out how far the effect of the implementation of the ongoing improvement.

Data analysis was carried out during and after data collection through answer sheets and observation sheets of student activities and teaching skills. In the pre-cycle; make observations and discussions with colleagues about the process of improvement that has taken place and ask for opinions about the implementation. In Cycle I; do question and answer with students about understanding the material in which they still have difficulty understanding the lessons given. Then in Cycle II; conduct observations on student activity and why students find it difficult to understand the material taught before implementing improvements.

Evaluation Monitoring Instruments refer to the purpose of the study, so data collection is obtained in various ways including; Written tests are carried out at the final stage to find out the extent of student success; Observations from peers so that peers can provide input or opinions on what researchers need to improve in the framework of future improvements so that teachers can improve their abilities, and can improve the quality of schools that the research does; Observation for students so the teacher can record things that are found and are needed to improve in the future so that they will be more effective; Then the documentation contains student data from pre-cycle to cycle II, so the time needed for the data can be used as a school guide.

3. Results and discussion
The results of the preliminary study in this classroom action research of 30 students in class I in 2019/2020, who were able to understand the material weight ratio of two objects well and scored more than 70 (KKM value of the author) there were 6 students or only 20%. From the results of this very lacking percentage, it is held or followed up with improvement efforts, namely by carrying out Cycle I and continued by using the media of scales of used goods as the main media in the implementation of cycle II, thus showing an increase in the results of the cycle. The results of this study can be seen in Table 1. The results of the research media lamp scales of used goods using SPSS Version 26.0 as follows:

| Table 1. Research results of lamp scales media from used goods. |
|-----------------------------------------------|
| **Descriptive Statistics**                     |
|                                              |
| **N** | **Range** | **Minimun Statistic** | **Maximum Statistic** | **Sum Statistic** | **Mean Statistic** | **Std. Deviation Statistic** | **Variance Statistic** |
| Pre_cycle | 30 | 40 | 40 | 80 | 1720 | 57.33 | 1.85/3 | 10,148 | 102,989 |
| Cycle_I | 30 | 50 | 40 | 90 | 2009 | 66.97 | 2.63/2 | 14,414 | 207,757 |
| Cycle_II | 30 | 30 | 70 | 100 | 2370 | 79.00 | 1.87/8 | 10,289 | 105,862 |
| Valid N (listwise) | 30 | | | | | | | | |
From the results of the implementation of the Pre cycle the percentage of the ability to compare the weight of two objects, there was a significant increase or rather before the action was implemented the percentage achieved by 20% increased to 50% after Cycle 1. Cycle I was more successful than the Pre cycle with the result of a percentage of 50% of students complete the material weight comparison of two objects, while the percentage of pre-cycle results is 20%. This means there is an increase in yield of 30%. The increase in results in the first cycle was due to the teacher being more creative and imaginative by using the media [18]. The impact of the results of the use of the media is very positive because students become interested and responsive and happy.

The success of the action in the first cycle cannot be said to have worked well because it only reached the medium category with a percentage of 50%. Therefore, researchers must still carry out actions in the next cycle to achieve maximum and optimal results. In Cycle II the activities carried out were to use media in the form of scales of lamps from used goods. With the help of the media, students can try to directly compare the weight of two objects. So that the second cycle is considered successful and the goal is achieved.

Strategies and uses of media that are more complex and interesting in the implementation of this second cycle all students actively participate and the enthusiasm of students in these activities and cooperation between students also increases. It affects the achievement of student learning outcomes in mathematics in the second cycle has increased. In percentage, the results of the ability of students in this second cycle are 100% or in the very good category, while the percentage of the results of the previous cycle or the first cycle is 50% so there is an increase of 50%.

Thus the Mathematical research with the scales of lamps of used goods on the material comparison of the weight of objects succeeded in accordance with expectations that can improve student abilities especially improves achievement in students of grade I elementary school. The right strategy is the right choice to convey the material so that it is easily understood by students [19,20]. Only by using teaching aids and appropriate methods, is the key to the success of teachers in providing material. With visual aids students will be motivated, surely the results will be maximized.

4. Conclusion
Based on the implementation of the strategy by using media scales of lamps from used goods that are appropriate in providing material in class I elementary school, the following conclusions are obtained; 1) Student activity has increased, marked by increased student motivation through clear and good teacher guidance and direction; 2) The use of media is very appropriate to use real objects when students make observations and the teacher always gives praise and appreciation to students; 3) The ability of students to learn mathematics with attractive teaching aids can improve their achievement; 4) The use of teaching aids by teachers is also able to improve teacher skills in teaching. By using teaching aids the teacher is more responsive to students because, with the teaching aids, the teacher can guide each student; 5) This research can improve mathematics learning in grade 1 students and can solve math problems.

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