

DEVELOPMENT OF STUDENT WORK SHEETS BASED ON TEACHING AND LEARNING APPROACHES TO IMPROVE THE CAPABILITY OF PROBLEM SOLVING OF BASIC CLASS IV STUDENTS

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ABSTRACT

This study discusses the development of an approach-based student worksheet (LKS) (CTL) that is valid, practical, and effective on the topic of statistics in grade IV of elementary school. The research method used is a type of 4D research design by Thiagarajan, Semmel, and Semmel (1974). This research was conducted in four phases, namely defining, designing worksheets, developing, and disseminating in elementary schools. Data was collected using document analysis, observation, interviews, field notes, tests, and questionnaires. The data collected is analyzed qualitatively and quantitatively. Based on the research that has been done, LKS has fulfilled the valid criteria in terms of content, approach, format, and language. The level of validity of the developed LKS is in a very valid category. The results of observations, questionnaires, and interviews showed that LKS was practical in terms of ease of use, use of time, and readability by teachers and students. In addition, LKS developed effectively improves students' problem solving abilities. Students can find statistical concepts with various activities on LKS, namely finding data, analyzing data, collaborating, trying, and solving problems related to everyday life.

Keywords: LKS, CTL, Problem solving Skill.

INTRODUCTION

Learning mathematics in elementary school about the nature of learning about abstract concepts and structures related to mathematics and looking for relationships between concepts and mathematical concepts. The purpose of learning mathematics is not only to solve problems in the form of quantitative calculations, but to discuss the

problem of thinking to solve a problem. Hermon (2015); Phonapichat & Wongwanich (2013) states that mathematics plays a large role in developing the human mind, bringing about a strategic, systematic thinking process used in problem analysis and solving. This helps students to be able to overcome, organize, decide, and solve every problem correctly in everyday life. Therefore, it is necessary to create a good and enjoyable mathematics learning process, so that the mathematics learning objectives can be completed.

Lack of teacher attention to the development of problem solving skills in the learning process of mathematics resulted in students lacking problem solving skills. Even though problem solving abilities need to be developed because it is one of the goals of mathematics learning in schools as stated in the Regulation of the Minister of National Education No. 22 of 2006 (Hermon and Dalim, 2005; Hermon and Dalim, 2006; Mone, 2006). To improve problem solving skills need to be developed skills to understand problems, make mathematical models, solve problems, and interpret solutions. So that mathematics learning is not just to make students able to solve mathematical problems by applying mathematical formulas but furthermore, students must be able to explain the results of the problem solving process.

Various efforts were made by the teacher to improve the quality of learning starting from innovating in class management, learning methods, and relevant learning media. As is currently often discussed the effectiveness of using LKS in learning. In line with the research conducted by Celikler (2012) that student worksheets (LKS) make students active in a learning environment that shows how to get findings in a controlled manner by making observations, forming hypotheses and conducting experiments around a particular topic. One way to solve problems can be shown by giving the necessary guidance to students with worksheets. Mathematics learning using good LKS is to provide the widest opportunity for students to be able to develop their abilities in finding a concept or in solving a problem, because each individual will always be faced with problems that demand the search for solutions using student ideas according with the demands of the 2013 curriculum.

METHOD

This research is development research, or in English it is also called Research and Development (R&D). The model for the development of learning devices supported by Thiagarajan, Semmel, and Semmel (1974) is a 4D (FourD) model. This Four-D development model was chosen because it was in accordance with the problems behind this research. The first step in the development of the previous LKS must be curriculum analysis. In accordance with the main footing of education in Indonesia based on a predetermined curriculum. In the third stage, researchers can carry out trial and error and repeatedly until they obtain good quality LKS. The data analysis technique uses quantitative descriptive statistics, which is done by analyzing the feasibility of LKS based on the results of expert validation which includes material experts, languages and views, knowing the assessment of the feasibility of worksheets based on user responses that include teachers and students and knowing the problem solving abilities of students using LKS.

RESULTS AND DISCUSSION

The development of LKS is based on the CTL approach based on K 2013. Curriculum components that are directly related to LKS are Core Competencies (KI) and Basic Competencies (KD). The material contained in LKS is taken from material 2 meters for class IV. The concept that will be used in LKS is questions that relate to the life around students to bring up an understanding of statistics. Suppose students are asked to gather the age of classmates, then students pay attention after the data is collected what can be concluded from the data collection. The development stage is the stage to produce product development that is carried out through assessment by experts followed by revisions. Then the trial development of the resulting Student Worksheet (LKS) was conducted in class IV SD Jammiyyatul Hujjaj, Bukittinggi. The results of the LKS validation assessment by experts are 87% with very valid criteria. The results of the RPP Validation assessment by experts are 91% with very valid criteria. The results of the LKS practical assessment of teacher responses are 87% with very practical criteria and student responses to the use of CTL-based LKS are 81% with very valid criteria. Measurement of students' problem solving abilities is done by using research

instruments in the form of test questions modified based on the instrument developed by Lawson (2004). The test consists of 5 essay questions given to students at the 4th meeting. The final test scores of students vary between 60 to 100. The percentage of the average score is 80% with effective criteria. In this study only limited dissemination was carried out, namely by disseminating and promoting end products limitedly to teachers and students in other schools with an assessment of teacher responses 83% criteria were very practical and student responses 81% with criteria were very practical.

In accordance with the objectives of learning mathematics at school in the Regulation of the Minister of National Education No. 22 of 2006 (Mone, 2006) states that mathematics learning should begin with the introduction of problems that are appropriate to the situation (contextual problem). By proposing contextual problems, students are gradually guided to master mathematical concepts. One approach that can be used to improve students' problem solving skills is the Contextual Teaching And Learning (CTL) approach. Presentation of LKS with the concept of the Contextual Teaching And Learning (CTL) approach, by linking it in everyday life and using real examples related to everyday life will bring students to the real conditions and make mathematics no longer an abstract subject that used to be scary and boring it is expected that there is no need to happen again, because mathematics can be learned on its own using the LKS provided. LKS is presented with activities to find the concept of solving the problem presented. LKS performance must be adjusted to the characteristics of elementary school students. This will certainly be of interest to students who have great curiosity.

Selvianiresa (2017) shows that CTL learning can be successful, when learning is used collaborative interactions with students, high levels of activity in lessons, connections to real-world contexts, and integration of science content with content and other skill fields. Therefore, CTL learning can be applied by learning mathematics in elementary schools. Then the research conducted by Zulyadaini (2017) with CTL-based student worksheets that connect what is taught in class with real world situations gives a very good ranking category for students to use in learning. Fajar Sadiq in Zulyadaini (2017) stated that one of the emerging mathematical trends in education in the world today is a shift in mathematics education from the formal form to its application, process

activities, and problem solving in real situations. In other words it is a process from deductive to inductive. One model that can be applied to this demand is Contextual Teaching and Learning. The use of Contextual Teaching and Learning (CTL) approach will guide students to obtain a concept, develop their ideas and increase intellectual potential in finding something new that is encapsulated in the seven main components of CTL, namely: constructivism; inquiry; asking; learning community; modeling; reflection; and authentic scores. Thus students will better understand the concepts and learning will better understand.

CONCLUSION

LKS based on the CTL approach as a whole are categorized as valid, practical and effective based on the results of expert validation, the response of teachers and students as users. LKS can also increase students' interest in learning mathematics, improve students' mathematical problem solving skills in learning seen during learning using LKS.

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