DEVELOPMENT OF STUDENTS WORK SHEET BASED ON CONSTRUCTIVISM IN LEARNING MATHEMATICS IN SMP

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ABSTRACT

The learning process which tends to present formulas and examples of questions makes students not interested in learning mathematics, so that students only read and memorize the existing formulas and do not require students to be more active in constructing their knowledge. The impact, the level of understanding of students towards the subject matter is not optimal. One effort that can be made to overcome this problem is to develop a Constructivism-based Student Worksheet (LKPD) in mathematics learning in junior high schools that is valid and practical. This type of research is development (Research and Development) using the Plomp research design. The Plomp development model consists of three development stages, namely: the initial investigation phase, the development phase and the prototyping phase and the assessment phase. In the initial investigation phase, needs analysis, curriculum analysis, and concept analysis related to problems in mathematics learning are carried out. In the development phase or making a prototype, a constructivism-based student worksheet is designed to optimize students' understanding by constructing it themselves. The development phase of the product validity assessment was obtained from a validity questionnaire from 2 lecturers and 1 mathematics teacher with the valid category of 77.31%, and the practicality assessment of the practicality questionnaire of students at the trial stage with the very practical category of 85.24%. Therefore, it can be concluded that the student worksheets are valid and practical. Valid because it has met the valid criteria in terms of content and construct. Practical because it is easy to use and understand.
Keywords: LKPD, Constructivism, Pythagoras Theorem.

INTRODUCTION

Teaching materials are all forms of material used to assist teachers / instructions in carrying out teaching and learning activities in class, the material in question can be written or unwritten material [1]. One type of teaching material that is usually used in schools is student worksheets (LKPD) or known as student worksheets (LKS), which recently the name for LKS has changed to become LKPD. "LKPD is one of the printed teaching materials used by teachers to support their learning activities. LKPD can be in the form of theoretical or practical assignments that are arranged systematically. " [2].

Learning mathematics uses the 2013 curriculum but still applies conventional learning and the learning device used is a textbook. Textbooks that do not support the curriculum used and tend to present formulas and sample questions make students not interested in learning mathematics so that students only read and memorize the existing formulas.

This results in students forgetting quickly because they do not understand the material being studied and when facing practice questions, students find it difficult to complete because students have not been directed to construct their own knowledge. As a result, the level of understanding of students towards the subject matter is not optimal.

The purpose of this research is to develop Constructivism-Based Student Worksheets in Junior High School Mathematics Learning.

METHOD

This research includes the type of research and development (Research and Development). Research and Development is a research method used to produce certain products, and to test the effectiveness of these products [3]. This development procedure is guided by the research and development steps which consist of three phases, namely the preliminary research phase, the development or prototyping phase and the assessment phase [4].

In the implementation of research and development, the author uses two types of data collected, namely quantitative data and qualitative data. Quantitative data were obtained from the score of the validator assessment questionnaire (validity test) and student assessment (practicality test). Qualitative data in the form of criticism and validator suggestions on the

product being developed and a description of the product trial implementation The research instrument that the author uses, is a validation sheet and a practicality test questionnaire.

Content validation analysis provides a validator score for each indicator with an assessment on the validation questionnaire with a rating scale [5]:

<50% = Less (not valid)
51% - 70% = Enough (quite valid)
71% - 90% = Good (valid)
91% - 100% = Very Good (very valid)

Calculating the validation questionnaire assessment using the formula:

$$\text{Value of validity} = \frac{\text{Sum of all scores}}{\text{Maximum score}} \times 100\%$$

Practical analysis to determine practical criteria, determine practicality value calculated using the formula below:

$$\text{Practicality value} = \frac{\text{Sum of all scores}}{\text{Maximum score}} \times 100\%$$

Then calculate the number of scores obtained according to the indicator, by providing an assessment of practicality with the criteria [6]:

86% - 100% = Very Practical
76% - 85% = Practical
60% - 75% = Quite Practical
≤ 54% = Very impractical

RESULTS AND DISCUSSION

The development of Constructivism-based LKPD is carried out in 3 stages according to the stages according to Plom, namely, the first phase of preliminary research conducted curriculum analysis, student analysis, and material analysis.

The learning characteristics contained in the developed LKPD are orientation activities, at this stage the researcher will activate the knowledge of students by providing a presentation of contextual material. In elicitation activities, the researcher raises questions relating to contextual material so that students can express their ideas. In restructuring activities, students are asked to discuss the ideas they get with other students, then make conclusions from the results of the discussion. Then apply the ideas that have been built to the existing questions. In the last activity, namely a review, the application of ideas by providing practice questions to find out the extent to which students understand the material they have learned.

The constructivism-based LKPD has been designed and discussed with the supervisor, then validated by the validator. The results of the LKPD validation can be seen in Figure 1 below.

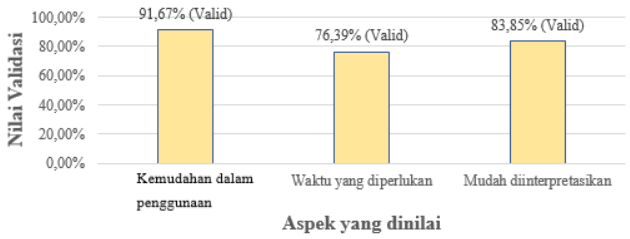

Figure 1. Results of Validation Test Sheet Analysis by Validators.

Overall, constructivism-based LKPD is classified as valid, namely 77.31%. According to the assessment criteria, it was found that the constructivism-based LKPD was categorized as valid.

Practicality data were obtained through a questionnaire given to students. The results of practicality questionnaires for students can be seen in table 2 below.

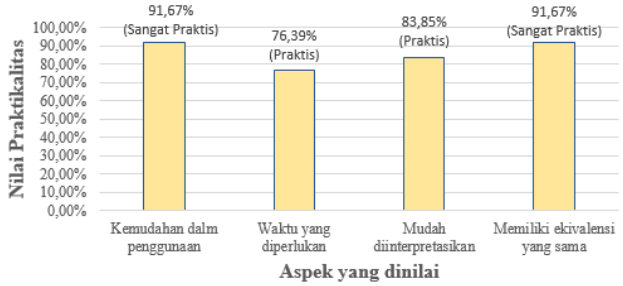

Figure 2. The results of the LKPD Practicality Questionnaire Analysis of the Students LKPD

Practicality as a whole was 85.24%. It can be concluded that constructivism-based LKPD is practically used by students.

CONCLUSION

Based on the results of the study, it can be concluded that this research has produced a student worksheet based on constructivism, the Pythagorean Theorem material for class VIII is valid and practical to use. Valid based on didactic aspects, construction aspects, and technical aspects. Practically used by students and educators seen from the ease of use and the effective use of time in learning.

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