



Developing of Contextual Teaching and Learning (CTL) Materials By Using Webbing

Props on Surface Area and Volume of Pyramid in Grade 8th of SMP Negeri 9 Kota

Kupang

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Abstract

The problem that underlines this research is the lack of teacher creativities in the learning material and also the inefficiency of material used to develop students who are active in learning process. Therefore, this research is aimed to produce such material of CTL basis using a valid, practical and effective method on learning the surface area and volume of a pyramid. The method which is used in this research is research and development based on qualitative and quantitative data. This research involves 20 students of grade 8thSMP Negeri 9 Kupang. This process refers to development model of four D modification which is done through three phases: define, design, and development. Based on the data analysis, the researcher found that the material of CTL is valid, practical and effective, which is based on validation criteria (agreed by validator). This is shown through students worksheet which categorized students as very practical (92.8%). It is also shown on the effectiveness of assessment sheets of students' activities, which is great (72.5%). Dealing with the response, students gave good feedback (96.5%). Concerning students' learning outcomes, 80% of students passed the test, with an average of 74.96%.

Key words: *Material, Contextual Teaching and Learning, four D model, surface area, volume of pyramids.*

Introduction

In the world of education, learning is strongly supported by teachers, students, learning media and facilities. An ideal learning process happens if it also supported by good learning media. Learning media consist of lesson plans, teaching materials, student worksheets, syllabus and a student assessment format. According to Setiawan (2007) (in Chomsin & Jasmadi, 2008: 53) teaching materials are materials or subject matter systematically arranged. Teaching materials is one part of the learning device.

Based on the observations carried out in SMP Negeri 9 Kota Kupang, especially in learning material concerning the surface area and limas volume, it seems that the method used is still classified as conventional learning, because the teacher simply transfers the knowledge to student without promoting independent learning. One of the reason for this is that the teaching material is not effective. This is shown by most student not reaching the completeness of knowledge when the evaluation process is done. Further, the teaching material used is too simple. The lack of activities in the teaching materials impacts on the lack of student activity in the learning process. As a result, a lack of student interest exists, decreasing students' ability to follow learning and to remember taught material.

The conditions above present strong validation for the need to develop teaching materials to foster more student activity in learning. In other words, teaching materials must contain activities that can improve the cognitive function and memory of students. Real objects in the form of props can help students. When students directly see and try for themselves, it will be easier for them to remember and to understand the material. In relation with the above conditions, learning can be improved with real or contextual objects, in learning with the Contextual Teaching and Learning (CTL) approach. CTL is one of the learning models in which

students are given real problems related to expected learning goals, by the teacher. The CTL approach is a learning concept that helps teachers associate teaching material with real world situations. It encourages students to make the link between the knowledge they have and its application in their daily lives (Aqib, 2013: 4).

Materials and Method

The type of research that will be used in this study is Research and Development. Model developments, used to develop internal teaching materials in this study, is a modification of the 4-D model, proposed by S. Thiagarajan, et al. This research was conducted at SMPN 9 Kota Kupang in the academic year of 2016/2017. The subject of this study was the eighth grade students of SMP Negeri 9 Kota Kupang. The procedure for developing teaching materials in this study can be briefly explained as follows:

1. Defining Phase (Define). This stage is done to determine and define the conditions of learning. This stage consists of 5 activities (in Mulyatiningsih, 2014: 195):

- a. *Preliminary analysis.*

At this stage, the teacher makes an initial diagnosis to improve efficiency and effectiveness of learning

- b. *Student Analysis*

At this stage, the researcher investigate the characteristics of students, for example: ability, learning motivation, experience, background, etc.

- c. *Analysis of Concepts / Material*

Analyze the concepts to be taught, follow the steps which will be done rationally.

- d. *Task Analysis*

Writing learning objectives, expected behavior changes after learning with operational verbs.

- e. *Specifications of Learning Objectives. Write the learning objectives and the behaviour changes after learning with operational verbs.*

2. *Design Phase (Design)*

In the design phase, the researcher has made a prototype or design product. This stage aims at producing CTL teaching materials. The results in the splash stage are Draft A. The activities at this stage are as follows:

a. *Media Selection*

This activity aims at selecting the learning media according to the material to be taught; surface area and volume of a pyramid. The media used is woven or webbing props. Other supporting media can also be used in the learning.

b. *Format Selection*

At this stage, the selecting of an accurate format is done to design the learning content, strategies, learning methods, and resources learning.

c. *Initial Design*

Draft writing and beginning of teaching material. The initial design of the teaching material produced is the Draft A. Then the initial product that has been made is validated by the expert team at the development stage.

3. *Developing Stage*

The purpose of this stage is to produce the valid, practical and effective Final Draft of Teaching Materials used in CTL. To prove that the teaching material produced are valid, practical and effective, the data must be analyzed. Data on the validity of the teaching

materials was obtained through the Learning Material validation sheet taken from the validator. The data is presented in the form of qualitative data, namely suggestions / comments and follow ups with the validators. Practical data for Teaching Materials is obtained through the practical questionnaire filled in by the teacher. To analyze the practicality of teaching materials, based on instruments given, the formula below was used.

$$P = \frac{\text{total score of observer}}{\text{Maximum score}} \times 100\%$$

Maximum score

After that, the values obtained are classified according to the criteria stated by Ridwan (Pariska & Suci, 2012: 78) with 0 - 20 categorized as very less, 21-40 categorized as less, 41-60 categorized as sufficient, 61-80 categorized as good, 81-100 categorized as very well. Practical indicators state that the results of analysis of student response questionnaire sheets and teacher responses are positive. Teaching materials can be considered practical if they are in the practical or very practical category.

For the student response questionnaire data, obtained on the observation student activity sheets, are to be analyzed based on observations. The data is processed with the following formula:

$$P = \frac{\text{total score of data collection}}{\text{Total score of criterion}} \times 100\%$$

Total score of criterion

Then the values obtained are classified according to the criteria stated by Ridwan (Pariska & Suci, 2012: 78) with 0-20 categorized as very less, 21-40 categorized as less, 41 - 60 categorized as sufficient, 61-80 categorized as good, and 81-100 is categorized as very good.

To analyze the completeness of the learning outcomes test, it is done by counting the percentage of the test results of student learning with formula (Prihadi, 2014: 70) as follows:

$$P = \frac{\text{total of students completeness}}{\text{Total number of students}} \times 100\%$$

Total students

Teaching materials are declared effective based on the observation activity; student's worksheet. If the average score of each meeting assessed is in the good category or very good, and completeness presentation is at least 75%, then students meet the minimum completeness criteria set by the school at 67.

Results and discussion

According to the Ministry of National Education's Learning Materials Development Guide (Chomsin & Jasmadi, 2008), development of teaching materials should pay attention to the learning principles, starting from easy to difficult, from concrete to abstract. Repetition will strengthen understanding, positive feedback will provide reinforcement towards student understanding. Further, high learning motivation is one factor that can be a determinant of learning success. Reaching the goal is like going up a ladder, step by step, it will finally reach a certain criteria and know the results that have been achieved will encourage students to continue to achieve their goals. The learning model, chosen in the development of this teaching material, is Contextual Teaching and Learning (CTL) and the material selected is Broad Surface and Volume of Limas.

This development research aims at producing material teaching based on Contextual Teaching and Learning (CTL) using valid, practical and effective webbing media. This development research using one of the development research models, namely a modification of the four-Ds with stages: define, design, and develop.

At the define stage an initial analysis is carried out, student analysis, material / concept analysis, task analysis and specific learning objectives. In the initial analysis, the researchers looked at the learning that occurred in SMP N 9 Kota Kupang, then analyzed students

involvement in learning, then analyze the material or concepts. In this matter the material in question is limas surface area and limas Volume. The researchers then analyze the tasks relating to the basic knowledge that has been possessed by the students. The last step is to do specific learning objectives related to material to be taught.

The design stage includes the selection of media according to material, format selection using the CTL learning format, then compiling teaching materials and learning implementation plans, and the development of learning outcomes test questions, consisting of contextual questions.

In the development stage, printed teaching materials are produced. After that, the formative evaluation phase is carried out with the aim of obtaining assessment, comments, and suggestions for improving the teaching materials.

Formative evaluation consists of expert validation and product testing. Validation experts assess teaching materials by providing comments and suggestions on teaching materials. This is done with the aim of knowing the validity of the teaching materials.

Based on the assessment and comments from the validators, the teaching materials is declared valid. After going through the stages of expert validation, the teaching materials are then tested on small or non-class research subjects. The purpose of small-scale trials is to test the readability of the teaching material; is the teaching material easily understood by students? Overall assessment and responses, through the student response questionnaire, showed good results. Small group trials obtained a percentage of 81%-100% (within the category very good) and the percentage of product trials against student responses was 93.6%.

After the development stage, we then proceed to the trial stage. Field trials are carried out at a large scope, namely on a research subject. Learning activities are carried out using teaching materials which have gone through expert validation and product testing. Activities

learning is done over the course of 2 meetings, and 1 meeting is used for test activity. During the learning activities an assessment takes place; observation of student activities, in following learning, by an observer.

From the student questionnaire responses obtained, the students' responses to teaching materials was 81% -100%, categorized as very well, and the percentage of student responses obtained was 96.5%. In the calculation of test questions, 80.00% of students completed or reach 65, as the standard of completeness. Student learning completeness is said to be complete learning where students achieve an average value of ≥ 65 (on a scale of 100) and one class is declared complete if 75% of students have completed. Thus, class VIII G students have met the class completeness requirements determined by the school.

Based on the assessment of student activity, student's response and the result of the student learning test, the learning material is effective. The model teacher, at the end of the learning period, provides an assessment of teaching materials regarding the practicality of the teaching materials. From the practicality questionnaire, filled in by the teacher, the practicality percentage of teaching materials is within the 81% -100%; categorized as very good practice. The practicality percentage obtained was 92.8%. Based on the assessment of the practicality of the teaching materials, the teaching material is to be considered practical.

Overall, based on expert validation, testing of the product and field trials, it can be concluded that teaching materials, based on Contextual Teaching and Learning (CTL) using woven props, are suitable for use in the learning process.

Conclusion

Based on the results of the study it can be concluded that the development of learning devices, used on the material surface area and volume of a limas, based on Contextual Teaching



and Learning (CTL), are valid based on expert comments /suggestions. The practice and effect of these learning devices is to increase student activity. The quality of students response to the learning material is very good, and the result of learning test is 80 %.

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