

LEARNING CYCLE 5E MODEL IN STUDENT WORK SHEET MATERIAL RANK

Amallia Vidya Sari¹

¹Mathematics education, Teacher training and education faculty,

²Universitas Muhammadiyah Sumatera Utara, Indonesia

ABSTRACT

Teaching materials that are too monotonous and have no color in the LKPD which is currently used by many students at school make students less interested in seeing and even reading them. The purpose of this study was to develop Mathematics LKPD using the 5E Learning Cycle Model on rank material. This research is a development research (RnD) using a 4-D model, namely the define stage, the design stage, the develop stage and the disseminate stage. However, it was modified into 3-D because the medium for its application did not reach its deployment. The research instruments were the RPP due diligence questionnaire and the LKPD due diligence questionnaire. Based on the results of expert validation, from the results of the final assessment on RPP validation by the three experts with an average of 4.4 with a percentage of 88.5%, namely the very feasible category. The results of the final assessment on LKPD validation by the three experts with an average score of 4.3 with a percentage of 87.3%, namely the category Very feasible. Based on these data it can be concluded that the development of Student Worksheets Based on the 5E Learning Cycle Model on Rank Material is very feasible to use.

Keywords: Student Worksheets, Learning Cycle 5E Model, Rank Material.

Corresponding author:

Amalia Vidya Sari

Mathematics education, Teacher training and education faculty

Muhammadiyah University of North Sumatra

Jalan Captain Muktar Basri No 3 Medan 20238, Indonesia.

Email: amaliavidyasari@gmail.com

1. INTRODUCTION

Education can be realized by teaching efforts through the learning process in schools. A teacher must have readiness before meeting students every day. Readiness can be proven by availability of learning tools owned by the teacher. the device including syllabus, lesson plans, materials, media, mastery approach/strategy/method/technique learning and preparation of sheets student work (LKPD) (elfrianti, 2022) [1] . One of the learning resources and learning materials that can help students and teachers in the learning process is LKPD. LKPD are sheets of paper that contain a description of the learning material to be delivered, work steps to be carried out by students and exercises to be completed by students. (Asrar, 2021) [2] . Student Worksheets (LKPD) is a printed teaching material in the form of sheets of paper containing material, summaries, and instructions for implementing learning tasks that must be done by students with reference to Basic Competency (KD) that must be achieved, Andi Prastowo (2011 : 204) [3] . Therefore, the existence of LKPD in a learning activity is very important, in line with the enactment of the 2013 Curriculum. Forms of Student Worksheets (LKPD) that are good/appropriate for use in the learning process are student worksheets that have the aim of increasing student involvement or student activity in the teaching and learning process, changing learning conditions from Teacher Centered to Student Centered, and also help educators direct students to be able to find concepts and train creative thinking skills by playing an active role.

According to Ginting (2022), the learning process using LKPD does not take a long time, because all activities have been carefully prepared, so that the entire series of activities can take place in a timely manner. Where the LKPD consists of several series, such as material summaries, sample questions, questions, as well as instructions and activity steps, so that students can complete them properly. The summary of the material contained in the LKPD can help students master the material

being studied. By using LKPD the learning process becomes more effective and efficient because it involves students' activeness in the learning process. [4]

Learning Cycle Learning Model (cyclical learning), which is a student-centered learning model (student centered). The Learning Cycle should be prioritized because it is in accordance with Piaget's learning theory, a constructivism-based learning theory. Piaget stated that learning is the development of cognitive aspects which include structure, content, and function. Intellectual structures are the high-level mental organizations that individuals have for solving problems. Content is the typical behavior of individuals in responding to the problems encountered. While function is a process of intellectual development that includes adaptation and organization.

The distinctive feature of the learning cycle learning model is that each student individually learns the learning material that has been prepared by the teacher. Then, individual learning outcomes are brought to groups to be discussed by group members and all group members are jointly responsible for the overall answers to the learning model. The learning cycle basically has 5 phases called (5E), namely: (1) Engagement (Invitation), (2) Exploration (Exploration), (3) Explanation (Explanation), (4) Elaboration (Development) (5) Evaluation (Evaluation).

This cyclical learning is suitable to be applied to grade VII SMP material. Where the stages in each phase of cyclical learning are able to describe Rank material in a systematic and structured manner. Starting from the engagement phase, in this phase the interest in learning, the curiosity of students along with the topics to be discussed will be raised through the provision of stimuli related to everyday life. This aims to increase students' creativity in determining predictions about related material and avoid the possibility of misconceptions in previous learning. In the exploration phase students will be brought in to explain and prove the basic concepts of related material, this phase is intended to strengthen students' knowledge about the basic concepts of the material to be studied. Furthermore, at the explanation stage students are required to be able to clarify basic concept proofs with their own sentences. At the elaboration stage students are guided to find formulas derived from the basic concepts that have been given in the previous stage. Evaluation is the final stage of the process of providing cyclical learning in student worksheets which will be developed this time, at this stage the provision of scaffolding and practice questions will be described in a structured manner so that students' ability to solve problems along with the learning outcomes of students will increase.

Several studies related to the development of teaching materials have been carried out. The results of the study reported that the learning achievement of students at a school in Taiwan increased when taught using a teaching material that was developed according to the needs of students. Teaching materials can also help students to understand well the concepts of the lessons being taught and can improve students' memory of the lesson. Based on the description above, understanding the concept does not only involve students but also requires the readiness of teaching materials in the form of worksheets used.

2. RESEARCH METHOD/MATERIAL AND METHOD/LETERATURE REVIEW

This research was conducted in class VII MTs Hasanuddin Medan which is located at Jalan Amal Luhur No.54 Medan, DWIKORA, Kec. Medan Helvetia and its implementation in the odd semester of the 2020/2021 Academic Year. As subjects in this study were class VII students of MTs Hasanuddin Medan 2020/2021. By testing the feasibility of LKPD, there is one media expert lecturer, one material expert, namely a class VII mathematics teacher at MTs Hasanuddin Medan. The object of this research is to develop LKPD based on the 5E Learning Cycle model on Rank material.

This research is included in research and development (Research and Development). In research and development methods there are several types of models. The model used in this study is the 4-D model (four D model). The 4-D learning device development model was developed by S. Thiagarajan (Trianto, 2009:189). Reasons for using models the development of Tiagarajan is because the model steps are able to provide detailed directions so as to provide clear information about the media applied. The steps of this 4-D development model consist of 4 stages, namely define, design, develop, disseminate. However, in this study modifications were made and only reached the 3-D stage because the application media was not disseminated. The media that is applied is then tested for feasibility with validity and limited field media trials to determine the eligibility of LKPD on Rank material developed using the Learning Cycle 5E learning model.

Defining Stage

The defining stage is useful for determining and defining needs in the learning process and gathering various information related to the LKPD to be developed. This stage is divided into several steps, namely:

- a. Initial Analysis (Front-end Analysis) Preliminary analysis is carried out to find out the basic problems in implementing LKPD. At this stage facts and alternative solutions are raised to make it easier to determine the initial steps in developing the appropriate LKPD to apply.
- b. KI and KD analysis KI and KD analysis, namely an analysis of Core Competencies (KI) and Basic Competencies (KD) related to the material that will be developed through student worksheets.
- c. Concept Analysis Concept analysis aims to determine the content of the material in the applied songket media. Concept analysis is made in learning concept maps which will later be used as a means of achieving certain competencies, by identifying and systematically compiling the main parts of learning material.
- d. Analysis of Learning Objectives (Specifying Instruction Objective) Analysis of learning objectives is carried out to determine indicators of learning achievement based on material analysis and analysis curriculum. By writing down the learning objectives, the researcher can find out what studies will be displayed in the LKPD, determine the problem grid, and finally determine how much the learning objectives have been achieved.

Planning Stage (design)

After getting the problem from the definition stage, then the design stage is carried out. This design stage aims to design a LKPD based on the 5E Learning Cycle model that can be used in learning mathematics. Activities at this stage include: making assessment instruments, selecting media and selecting formats.

Development Stage (develop)

This development stage aims to produce LKPD using the 5E Learning Cycle model which has been revised based on expert input and trials on students. There are two steps in this stage, namely as follows:

- a. Expert validation (expert appraisal) Expert validation in question is in the form of a feasibility test of mathematical material in the LKPD media prior to testing and the results of the validation will be used to revise the applied media. The results of this validation are used as material for improving the perfection of the developed LKPD. After being validated and revised, it will then be tested on students in the limited field trial stage.

Types and Sources of Data The type of data used in this study is quantitative data. Quantitative data was obtained from filling out the validation sheet for the feasibility test of the developed device .

3. RESULTS AND DISCUSSION

The What was developed in this study were Student Worksheets (LKPD) and Learning Implementation Plans (RPP). The model used in this study is the 4-D model (four D model). However, in this study modifications were made and only reached the 3-D stage because the application media did not reach Development. The results of the development of these learning tools can be described as follows:

Description of the Defining Stage (Define)

- a. Preliminary Analysis
Based on the results of interviews with the class VII math teacher at MTs Hasanuddin, the learning that has been done so far by the teacher does not involve students. Teachers still use conventional learning patterns, namely by explaining procedures with a few questions and answers and giving examples of questions. This results in students not being accustomed to exploring knowledge or ways of solving it on their own.
- b. KI and KD analysis
Based on the KI and KD analysis of rank material at MTs Hasanuddin school, the researcher is interested in developing Student Worksheets (LKPD) based on the 5E Learning Cycle model on rank material.
- c. Concept Analysis

Concept analysis aims to identify the main concepts being taught, arrange them in a hierarchical form, and detail the relevant concepts. Concept analysis is related to the analysis of the material being studied, namely by designing a concept map to make it easier for students to understand the subject matter. This concept analysis aims to identify the main parts that will be learned by students in the material rank .. Results of analysis

Description of the Design Stage (Design)

In the process of designing educational and innovative mathematical comic media, in this case the display design, it is necessary to have an initial design used to describe the making of the media. This is to determine the initial appearance (cover) along with the contents of the material contained in educational and innovative mathematics comic media.

- a. Preparation of LKPD Assessment Instruments
The LKPD assessment instrument is in the form of a product feasibility questionnaire. This product feasibility questionnaire generates data sourced from expert validators. The questionnaire for this eligibility was validated before being tested .
- b. Media Selection Results
The learning media needed in the implementation of learning mathematics on rank material includes Learning Implementation Plans (RPP) and Student Worksheets (LKPD).
- c. Format Selection
The format selection for student worksheets is adjusted to the principles, characteristics and steps of the 5E Learning Cycle-based learning model, in the learning implementation plan listed basic competencies, competency achievement indicators, learning objectives, materials, learning models and methods, tools/media / learning resources and learning activities. Learning activities consist of an introduction, core activities and closing .

Description of the Development Stage (Develop)

The results of the Student Worksheet Development Stage (LKPD) for each activity at this development stage are as follows, the resulting Draft 1 Expert Validation Results are validated by experts. Expert validation was carried out to see the validity of the learning which included all the tools developed which focused on format, language and content. The results of the validity of the experts are used as a basis for revising and improving learning tools. The results of the validation by experts can be seen in the appendix. The learning device that has been declared valid by the validator is called Draft 2.

Discussion of Research Results

Based on the description of the research results that have been described in the research results, the development of Student Worksheets based on the 4-D development model with the define, design, develop, and disseminate stages is obtained. Due to time constraints, this research was carried out until the development stage (develop).

The learning development stage starts from the definition stage (define). The definition stage (define) functions to analyze the needs in the learning process carried out. This stage consists of initial analysis, analysis of KI and KD, concept analysis, and analysis of learning objectives. Preliminary analysis is used to find out general problems encountered in mathematics learning activities, concept analysis aims to identify the main concepts taught in fraction material, KI and KD analysis aims to detail the Core Competencies (KI) and Basic Competencies (KD) to be used , while the analysis of learning objectives aims to formulate learning objectives that must be achieved by students during the learning process in accordance with the KI and KD used.

The next stage is the design (design). Selection of media to identify media that is relevant to the characteristics of the material and suitability for needs. The media used in this study is the development of Student Worksheets Based on the 5E Learning Cycle Model on Rank Material. In addition, a research instrument was also designed to measure the quality of the developed lesson plans and LKPD. The final stage of this research is development, the feasibility of the research instrument is validated before being used to measure the feasibility of lesson plans and worksheets. Based on the results of the RPP validation assessment, the validation results from validator 1 provide an assessment with an average of 4.5, namely the Very Good category or 90% very feasible category, validator 2 gives an assessment with an average of 4.5, namely very good category or 91.4% very feasible category,

validator 3 gives an assessment with an average of 4.2, which is a very good category or 84.2% very feasible category, the third expert validator gives an average rating of 4.4, namely the Very category Good or 88.5% very feasible category. The three validators concluded that the RPP can be used after revision.

The results of the analysis of the LKPD validation assessment, validator 1 gives an assessment with an average of 4.3, namely the Very Good category or 86% the category is very feasible, validator 2 gives an assessment with an average of 4.7, namely the Very Good category or 94% the category is very feasible, validator 3 gave an assessment with an average of 4.1, namely the Very Good category or 82% very decent category, the third expert validator gave an assessment with an average of 4.3, namely the Very Good category or 87.3% very decent category. The three validators concluded that LKPD can be used after revision. Based on this description, it can be concluded that the RPP and LKPD which were developed using the 5E Learning Cycle model, have the criteria of "Very Eligible". In addition, researchers can ensure that the LKPD made is suitable for use to complement learning.

4. CONCLUSION

Based on the results of the research and discussion, the researcher can discuss where the Development of 5E Learning Cycle-Based Student Worksheets on Rank Materials was carried out by observing 3 validators, namely 2 mathematician teachers and 1 mathematician expert, concluded that it was feasible to use.

REFERENCES

- [1] Elfrianto, E., Siregar, E. F. S., Pulungan, L. H., & Batubara, I. H. (2022). PENGUATAN GURU DALAM PENYUSUNAN LEMBAR KERJA PESERTA DIDIK (LKPD) BERBASIS QUIZZIZ DI SD MUHAMMADIYAH 29 SUNGGAL KAB. DELI SERDANG. *Martabe: Jurnal Pengabdian Kepada Masyarakat*, 5(1), 169-176.
- [2] Manurung, A. A., Nasution, M. D., & Nisah, K. (2021). Pengembangan lembar kerja peserta didik (lkpd) melalui strategi belajar small group work pada materi bangun ruang sisi datar. *Numeracy*, 8(2), 83-89.
- [3] Prastowo, A. (2011). Panduan kreatif membuat bahan ajar inovatif. Yogyakarta: DIVA Press.
- [4] Ginting, R. I. P. B., & Ammy, P. M. (2022). The Development of Student Worksheets (LKPD) On Relationship and Functions for High School Students. *Holistic Science*, 2(3), 127-131.