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DEVELOPMENT OF STUDENT WORKSHEETS BASED ON THE CONNECTING, ORGANIZING, REFLECTING AND EXTENDING (CORE) MODEL

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ABSTRACT

Developing teaching materials or LKPD in schools requires an interesting learning model. The appropriate model for developing LKPD that refers to students' real activities is the Connecting, Organizing, Reflecting and Extending (CORE) Model. Developing LKPD is a fundamental and important aspect for creating meaningful learning. This research was conducted to increase students' understanding, especially in learning mathematics and Two-Variavel Linear System material which has many implications in everyday life. In this research, researchers used research and development (R&D) methods. The subjects of this research and development were 30 Class 3 Science students at SMA Negeri 1 Leuwimunding. Based on research and development of mathematics LKPD based on the Connecting, Organizing, Reflecting, Extending (CORE) Class XI Science SMA Negeri 1 Leuwimunding model. can be concluded as follows: (1) The results of developing LKPD can be used as effective learning materials in the teaching and learning process; (2) The teacher's assessment of the mathematics LKPD shows an average score of 100% with the criteria "very good". (3) Based on the results of these calculations, the overall average percentage of answers is 55.04%. This means that the majority of students have a good response to learning mathematics using the CORE learning model.

Keywords: Mathematics Learning, LKPD, CORE**.**

INTRODUCTION

Education is a very important aspect that is the benchmark for the Indonesian nation and is an absolute necessity. Education is one of the supports for a nation's progress in terms of human resources (Septian et al., 2019). With education, it provides guidance and assistance to humans or individuals. Education provides knowledge and insight with the aim that humans or individuals can adequately and competently carry out their life tasks on their own without the help of others. Every aspect studied by an individual or someone refers to critical thinking. Any experience that has a formative effect on the way people think, feel, or act can be considered educational (Dewi et al., 2022). This represents a broad approach to the concept of education, recognizing that learning is not limited to the school environment or instructional formalities.

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Mathematics, as one of the scientific disciplines taught at every level of school education, is expected to contribute to developing the ability to think critically, systematically, logically, creatively, and work together effectively (Mardiana et al., 2020). Mathematics education at every school level aims to develop critical, systematic, logical, creative thinking skills and effective collaboration. This is due to a cohesive mathematical structure, where concepts are clearly related to each other. Mathematics learning will always be used in everyday life (Septian et al., 2019). By studying mathematics, students can practice rational thinking skills that enable them to face problems in everyday life more prepared. (NCTM, 2000) stated that the objectives of mathematics in schools include: (1) broadening students' knowledge horizons; (2) viewing mathematics as a unit, not as an independent material; (3) recognize the relevance and benefits of mathematics both at school and outside school. Thus, mathematics is not just about understanding formulas and theories, but also about developing deep and relevant thinking skills to overcome complex challenges in the real world.

Mathematics learning material that is often found and has implications in everyday life is the linear system of two variables (SPLDV). SPLDV is a concept in mathematics that includes two linear equations consisting of two unknown variables. In everyday life, we often encounter situations where we need to solve problems involving the relationship between two variables, such as the price of a good and the quantity purchased, or the time and distance of a trip. However, the reality that is often found is that mathematics learning is only based on formulas and cannot be implemented into everyday life. This is supported by the opinion of (Indriani & Noordyana, 2021) that students lack the ability to recognize equivalent representations of the same concept, recognize the relationship between mathematical procedures of one representation to other equivalent representation procedures, use and assess the connection between mathematical topics and the relationship of external topics. mathematics, and using mathematics in everyday life.

In the teaching and learning process, it is important to have resources that can be used to help students achieve learning goals effectively. The key to success in learning lies in the meaningfulness of the teaching materials received or studied by students (Sutarto, 2017). Learning resources act as tools to facilitate understanding and achievement of learning objectives. Teaching materials are one type of learning resource available, which are designed to help make it easier for students to understand and achieve learning objectives.

LKPD and LKS can be used to minimize the role of educators, but activate students more in the learning process (Septian et al., 2019). Student Worksheets (LKPD) are part of the teaching materials that function as a supporting tool in learning. Both LKPD and LKS (Student Worksheets) allow students to be more actively involved in the learning process, while reducing dependence on the role of the educator. These resources act as tools or materials used to facilitate understanding and effective

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achievement of learning objectives. By utilizing various types of learning resources, teachers can increase the effectiveness of teaching and make it easier for students to achieve good understanding.

Results of observations and interviews with teachers in high school. show that the teaching materials generally used include textbooks and Student Worksheets (LKPD). Although textbooks often lack material, teachers tend to rely on them. LKPD is only obtained through subscriptions or regular sales visits. Practice questions are usually taken from textbooks and used as LKPD in the learning process.

The LKPD used by teachers does not introduce students to relevant problem contexts as a first step in learning. Apart from that, the LKPD has not been able to inspire students to gain motivation in studying mathematics and develop their own concepts and personal experiences. As a result, students tend to be inactive in learning and do not understand the material taught by the teacher. It is necessary to develop the inadequate LKPD in order to encourage active involvement of students in learning and fulfill the requirements set by the 2013 Curriculum.

Developing teaching materials or LKPD in schools requires an interesting learning model. One model that can be appropriate in developing LKPD that refers to students' real activities is the Connecting, Organizing, Reflecting and Extending (CORE) Model. The learning model chosen must be able to connect mathematical concepts, both with previous concepts and with everyday life. The learning model that can be applied is the CORE (Connecting, Organizing, Reflecting, Extending) learning model (Mardiana et al., 2020). This model design further constructs students to be able to connect, organize knowledge and then reflect on what they learn.

Integrating the CORE model into Student Worksheets (LKPD) is an important step in increasing learning effectiveness. A learning model is a learning reference that is carried out based on certain learning patterns systematically (Zuhaida, 2016). In this Model, students are given the challenge to solve problems with their own approach, allowing them to develop deeper understanding and strengthen problem-solving skills. Students can share ideas and learn from each other, increasing the understanding and implications of what they learn. This model not only motivates students to be more actively involved in learning, but also creates an environment that encourages student creativity and empowerment in solving real problems. Thus, the integration of the CORE model in LKPD can increase learning effectiveness and enrich students' learning experiences.

The stages of the CORE learning model, namely the first stage, Connecting, are connections between old and new information between mathematical topics and concepts, connections between other scientific disciplines, and connections with everyday life. The second stage of Organizing is the organization of ideas to understand the material. The third stage of Reflecting is rethinking, deepening and exploring. The fourth stage of Extending is developing, expanding, discovering and using (Sofiarum et al., 2020). Based on the stages above, the CORE learning model consists of four sequential

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stages, starting with the Connecting stage. This stage involves connections between information that students have mastered and new information that is taught, both in the context of mathematics and in the context of everyday life. The second stage, Organizing, focuses on organizing ideas or concepts to make it easier to understand the material being taught. After that, the Reflecting stage allows students to rethink, deepen and explore their understanding of the material. Finally, the Extending stage encourages students to develop, expand, discover and use their understanding in a broader context. Thus, the CORE learning model provides a clear and systematic framework for improving students' understanding and application of mathematical concepts.

The above background underlies researchers to carry out development research, especially the development of LKPD. Developing LKPD is a fundamental and important aspect for creating meaningful learning. Researchers plan to develop Mathematics Student Worksheets (LKPD) Based on the Connecting, Organizing, Reflecting and Extending (CORE) Model. This is supported by research results (Pulungan et al., 2021). that the use of the CORE learning model obtained an average score of 3.80 when consulted in the "very good" category and it can be concluded that the use of the CORE learning model at SMP Negeri 8 Padangsidimpuan has been achieved. Well done. So this research was carried out to improve students' understanding, especially in learning mathematics and Two-Variavel Linear System material which has many implications in everyday life.

METHODS

In this research, researchers used research and development (R&D) methods. According to (Sugiyono, 2011), "research and development (R&D) methods are research methods used to produce certain products and test the effectiveness of these products." The subjects of this research and development were 30 students in Class 3 Science at SMA Negeri 1 Leuwimunding.

Developing LKPD using the CORE model includes Prototyoe LKPD activities based on the Connecting, Organizing, Reflecting and Extending (CORE) Model using Microsoft Office Word 2019, making question instruments, Validators (Experts and practitioners), revisions, trials and final revisions. The validator consists of 2 people, namely learning model experts and those who have competence in the field of mathematics. This was done to obtain the validity of the LKPD based on the Connecting, Organizing, Reflecting and Extending (CORE) model and the question instruments that were tested.

FINDINGS

1. Development of Mathematics Student Worksheets (LKPD) Based on the Connecting, Organizing, Reflecting and Extending (CORE) Model in class XI Science at SMA Negeri 1 Leuwimunding.

   Research and Development produced an LKPD in the mathematics subject material Linear Systems of Two Variables (SPLDV) using the Connecting, Organizing, Reflecting and Extending

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(CORE) model in the 2013 curriculum in class XI Science at SMA Negeri 1 Leuwimunding. The developed LKPD contains LKPD quality requirements, as stated by Hendro Darmodjo and Jenny in Widjajanti (2008: 3), there are three requirements regarding the quality of LKPD, namely: didactic requirements, construction requirements, and technical requirements. The didactic requirements for LKPD emphasize the process of discovering a concept. Learning activities begin with the teacher giving a problem, then students solve it in their own way. The development of Mathematics Student Worksheets (LKPD) based on the CORE Model follows a development process based on the 4-D research and development model proposed by Thiagarajan, Semmel, and Semmel in Trianto (2009:189). This process consists of four main stages: definition, design, development, and dissemination. The research steps have been carried out in accordance with these stages, namely as follows:

a. Define

Definitions in the Define stage involve five analysis steps, namely initial and final analysis, student analysis, concept analysis, task analysis, and formulation of learning objectives.

In the process of developing teaching materials, there are several important stages that need to be gone through to ensure that the materials prepared can meet the needs and abilities of students. The first stage is the Initial Final Analysis. This stage aims to identify problems that arise during the learning process. By understanding existing problems, we can find areas that need to be repaired or improved. The results of this analysis will be the basis for developing teaching materials that are more effective and appropriate to student needs. Next, we do Student Analysis. This stage aims to determine the level of understanding and abilities of students. By focusing on their developmental stages, we can adapt learning materials to suit students' abilities and needs. This analysis involves collecting data regarding students' backgrounds, learning styles, and their strengths and weaknesses in the learning process.

Then, we carry out Concept Analysis. This analysis is needed to find out what knowledge will be developed in the learning material. In this stage, we examine the main concepts that are relevant to the topic to be taught and ensure that these concepts can be understood well by students. This is important so that the material presented can build solid and meaningful knowledge for students. The next stage is Task Analysis. In this stage, we identify the skills that need to be applied in the learning task. Task analysis helps us design learning activities that not only convey knowledge, but also practice the practical skills students need. This includes critical thinking skills, problem solving, as well as other practical skills relevant to the topic studied.

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Finally, we formulate learning objectives. The formulation of this learning objective is a summary of the results of concept and task analysis. The formulated learning objectives will be the basis for preparing tests and learning tools. Clear and measurable objectives are very important to guide the learning process and ensure that all activities and materials prepared lead to achieving the desired learning outcomes. By following these stages systematically, we can develop teaching materials that are effective, relevant, and able to improve the quality of learning and student learning outcomes.

b. Design (Design)

After analyzing the curriculum, student characteristics, materials, and formulating objectives, the Design stage was carried out to prepare a CORE-based Student Worksheet (LKPD) that suited students' needs. The design stage consists of four steps, namely preparing a benchmark test, selecting learning media, selecting a format, and creating an initial draft of the LKPD.

c. Development Stage (Develop)

The development stage begins with validation by two expert validators. This activity aims to obtain suggestions and input to improve the development of LKPD.

1) Expert 1

Validation is carried out to obtain expert assessment of 1 Student Worksheet (LKPD). After the LKPD draft was given to expert 1 and the evaluation was completed, the design aspect was assessed "the color composition that separates the material from the interesting question instructions, but there is the use of words whose writing is cut off." Based on the validation results table which consists of 8 criteria aspects, a total score of 20 was obtained with an analysis process of 14 and a validity figure of 0.86 with high criteria. Expert 1 concluded that the LKPD developed was interesting and provided input on the use of language that was easy for students to understand.

2) Expert 2

This validation activity is carried out to find out whether the LKPD is appropriate from a linguistic aspect. Expert 2 stated that the preparation of the LKPD had been written taking into account the suitability of learning objectives and competencies. Input from expert 2 was to correct several sentences that students still did not understand. Based on the validation results consisting of 8 aspects, 23 validation criteria were obtained with an analysis process of 17 and a validity figure of 0.86 with high criteria.

d. Spread (Disseminate)

The deployment stage is the final step in the development process. This involves the distribution of Mathematics Student Worksheets (LKPD) based on the CORE model for class

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XI Science as a learning reference source to mathematics teachers for class XI Science 3 at SMA Negeri 1 Leuwimunding.

2. Teacher assessment of the use of Mathematics Student Worksheets (LKPD) Based on the Connecting, Organizing, Reflecting and Extending (CORE) Model.

   The teacher assesses student worksheets (LKPD) in mathematics which are based on the CORE model, especially on the material Systems of Linear Equations in Two Variables (SPLDV). The assessment is carried out after the learning process is complete, with an average score of 95% and a "very good" category. The teacher also provided feedback that the writing aspect was good, but the language aspect used to interact with students needed to be improved. Overall, the teacher stated that the Learning Plan (RPP), material and syllabus were in accordance with the 2013 Curriculum, and the learning process had gone well.

3. Student responses to the use of Mathematics Student Worksheets (LKPD) based on the Connecting, Organizing, Reflecting and Extending (CORE) Model.

   Based on the results of these calculations, the overall average percentage of answers was 55.04%. This shows that the average percentage of student responses to the CORE learning model is 55.04%. This means that the majority of students have a good response to learning mathematics using the CORE learning model. The results of the analysis test can be concluded that the majority of students have a good response to learning using the CORE model. It can be concluded that the use of appropriate and fun learning models can support students' cognitive and affective abilities. This is supported by the statement according to (Prasetyo et al., 2018) that one learning model that is thought to be able to improve mathematical connection abilities is the Connecting, Organizing, Reflecting, Extending (CORE) learning model.

DISCUSSION

The results of research and development of mathematics LKPD based on the CORE model at SMA Negeri 1 Leuwimunding show several significant findings. First, LKPD is effective as learning material. This is supported by the teacher's assessment which gives an average score of 100% with the criteria "very good". This shows that the LKPD is able to arouse students' interest and understanding optimally. Second, in terms of student responses, the calculation results show that the majority of students respond well to mathematics learning using the CORE model. The overall average percentage of answers reached 55.04%, which shows good student acceptance of the learning methods used. From these results it can be concluded that LKPD based on the CORE model is effective in improving the quality of mathematics learning at the high school level. Excellent teacher ratings and positive feedback from students confirm the value of using this learning model. The CORE Learning Model is an alternative learning model that can be used to activate students in building their own knowledge (Sofiarum et al.,

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2020). This also provides support to continue developing and implementing innovative and effective learning methods in the context of mathematics education.

CONCLUSION AND SUGGESTION

Based on research and development of mathematics LKPD based on the Connecting, Organizing, Reflecting, Extending (CORE) Class XI Science SMA Negeri 7 Cirebon model. The development of Student Worksheets (LKPD) plays an important role in creating effective learning materials in the teaching and learning process. The results of the development of this LKPD have been tested and show that the material prepared is able to support and improve the quality of learning. Good LKPD can help students understand the concepts being taught and practice the necessary skills. The assessment of the mathematics LKPD carried out by the teacher showed very satisfactory results. The teacher gives an assessment with an average score of 100%, which means the LKPD meets the "very good" criteria. This assessment reflects that the LKPD developed is in accordance with the expected standards and can be used effectively in mathematics learning. It is hoped that the high quality of the LKPD can help students understand mathematics material better and improve their learning outcomes.

Apart from teacher assessments, students' responses to the use of mathematics LKPD also showed positive results. Based on the calculation results, the average percentage of students' answers overall reached 55.04%. This figure shows that the majority of students respond well to mathematics learning using the CORE learning model. This positive response shows that students feel helped by the use of LKPD and the CORE learning model in understanding mathematics material. Overall, the results of effective worksheet development, excellent teacher assessments, and positive responses from students indicate that mathematics worksheet can be a valuable tool in the learning process. Thus, the use of well-developed LKPD can support the achievement of learning goals and improve the quality of mathematics education in schools.

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