Development of Student Worksheets Based on Critical Thinking Skills at MAN 1 Medan

Elly Damayanti Pulungan[1], Sulastri[2], Mayang Mustika Sari[3], Wahyuddin Nur Nasution[4], Nirwana Anas[5]

[1,2,3,4,5] *Universitas Islam Negeri Sumatera Utara, Indonesia*

Corresponding Author: ✉ elly0331223022@uinsu.ac.id

ABSTRACT

This study aims to develop Student Worksheets (LKPD) based on critical thinking skills. The development of LKPD was carried out using the 4D model, with a research design in the form of a one-group pre-test post-test design. The research activities were implemented in two replications during fiqh learning in grade XI IPS at MAN 1 Medan. The results of the study indicate that the LKPD meets the criteria for validity and effectiveness. The reliability and validity levels of LKPD each showed an average percentage of 86.35% and 92.64%. High n-gain values for critical thinking skills were demonstrated by the inference and strategy indicators. The legibility of LKPD was measured using a cloze procedure, which indicated a percentage of 95.38%. Student activities in this research were predominantly focused on completing LKPD. Based on the research findings, it can be concluded that the developed LKPD is suitable for improving critical thinking skills.

INTRODUCTION

Education is a comprehensive activity consisting of many closely interconnected parts. According to Law Number 20 of 2003 concerning the National Education System, Article 1, paragraph (1), it is stated that education is a consciously and systematically conducted effort aimed at creating a learning atmosphere or a learning process so that students can develop abilities that provide spiritual strength, religious values, independence, personality, intelligence, and high morality, excellence, as well as the skills needed for oneself, society, nation, and country. In the era of the 4.0 industrial revolution, marked by the evolving models of learning that continuously adapt to the needs of the current era, education must be capable of yielding not only in terms of learning abilities but also other competencies.The competencies expected from education graduates include the ability to think critically, exhibit high creativity,

collaborate effectively, and possess excellent communication skills. These are the teaching skills of the 21st century, known as the 4C - critical thinking, creativity, collaboration, and communication.

One of the high-level thinking skills required to shape competent personalities in students is critical thinking. Critical thinking is crucial for students as it has a significantly positive impact on their development in various aspects, including education, careers, and daily life. When students develop critical thinking skills, they become more prepared to face future challenges and contribute positively to society. Therefore, education that promotes critical thinking is essential to help students realize their potential and become competitive members of society. One effort to enhance students' critical thinking skills is by developing teaching materials in the form of Student Worksheets (LKPD).

Student Worksheets (LKPD) have a significant impact on academic success. Therefore, this research will attempt to develop Student Worksheets based on critical thinking skills with the aim of enhancing student learning outcomes through the use of these learning resources. LKPD serves as a supporting tool and facilitates learning activities that can foster effective interaction between educators and students. It is expected to improve students' performance in enhancing learning outcomes. These worksheets are learning resources that can be developed by teachers as facilitators to support student learning activities.

The development of Student Worksheets (LKPD) can be designed and developed based on the conditions and situations of the activities being carried out. In the learning process using LKPD, students acquire knowledge on their own by engaging in activities according to the instructions provided in the worksheets, rather than solely relying on the teacher's explanations. This aligns with the constructivist learning theory. Constructivist learning theory provides ample space for students to understand what they have learned by applying the concepts they know, enabling them to apply them in their daily lives. Based on the aforementioned background, a research study titled "Development of Student Worksheets Based on Critical Thinking Skills at MAN 1 Medan" is conducted.

RESEARCH METHOD

This research utilizes the research and development method of learning design using the 4D model, which is employed to develop learning tools. The 4D model was developed by S. Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel in 1974. As the name suggests, the 4D model comprises four main stages: Define, Design, Develop, and Deliver. The first step undertaken by the researcher is the definition stage. This involves conducting a preliminary survey to analyze and identify issues within the learning process. Issues arising during the learning process serve as obstacles to learning. The

researcher conducts observations and interviews with the Fiqih (Islamic Jurisprudence) teacher of Class XI at MAN 1 Medan. The planning stage is then carried out to design the Student Activity Sheet (LKPD) product to be developed based on critical thinking skills. The development activities include the preparation of the LKPD writing format. This planning aims to produce LKPD that meets the needs of students, both in terms of form, content, system structure, and in accordance with the predetermined pattern.
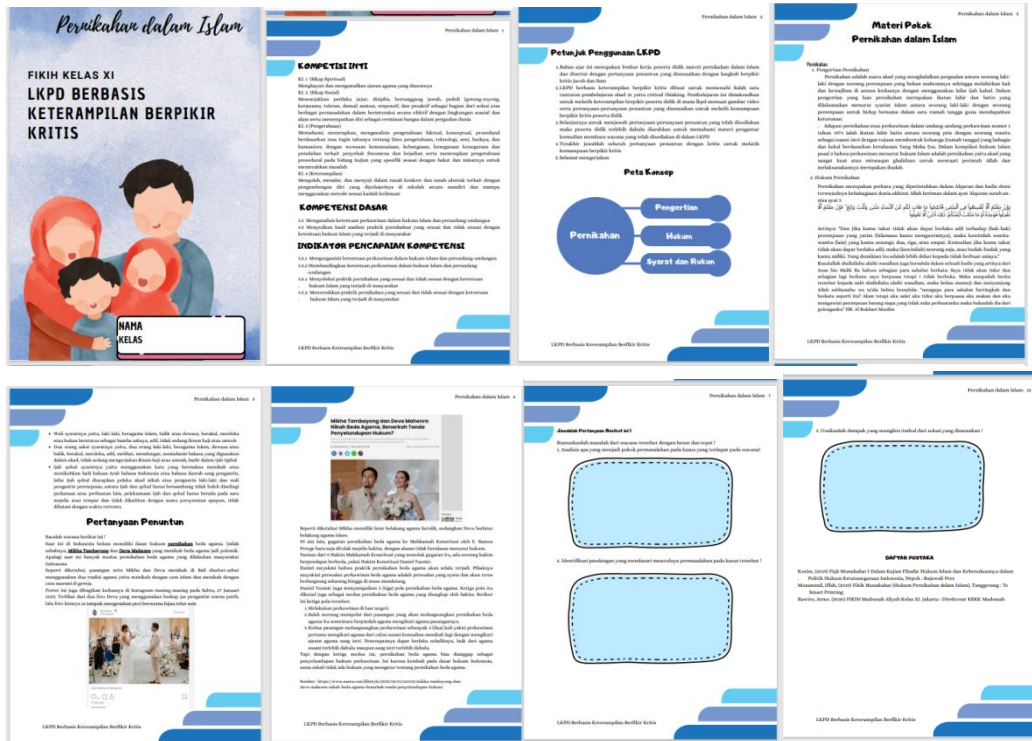

Figure 1.
Layout Design of Student Worksheets Based on Critical Thinking Skills

This development stage produces critical thinking skills-based Student Worksheets (LKPD), which have been revised based on feedback provided by validators (expert lecturers). Validation will be conducted by educational experts, specifically lecturers from UIN Sumatera Utara, and by Fiqih subject teachers from MAN 1 Medan. Following the development of this instructional tool in the form of Student Worksheets, a product trial will be carried out with a small group of students for testing and evaluation.

The dissemination stage involves the widespread implementation of the developed Student Worksheets (LKPD). In this context, the researchers carry out dissemination by uploading the designed LKPD on the official school website.

RESULTS AND DISCUSSION

This developmental research focuses on the implementation of improvements to Student Worksheets (LKPD) based on critical thinking skills for 11th-grade students in the Social Sciences program at MAN 1 Medan. The development process of the LKPD assesses the validity of the instructional tool through two main criteria: validity based on the readability level of the LKPD and effectiveness criteria reflected in the improvement of students' critical thinking skills after the implementation of LKPD in the learning activities.

The validity of the instructional tool in this research is assessed through the readability level of the Student Worksheets (LKPD) based on critical thinking skills. Scientific readability of the LKP becomes a crucial factor influencing the achievement of learning indicators or goals designed by the researcher before teachers implement the development of LKPD in learning activities.

This research employs the cloze procedure test to evaluate the readability level of the Student Worksheets (LKPD) based on critical thinking skills. The results of the readability test for critical thinking skills show a high readability level, reaching 95.38%. This indicates that the developed LKPD in this research can be read and understood well by students (McKamey, 2006).

The high readability level is reinforced by the validation results of the Student Worksheets (LKPD) in three aspects or assessment components: presentation format, language, and content. The validation results for each of the three assessment components show reliability percentages of 93.72%, 97.58%, and 94.73%, respectively.

The effectiveness criteria refer to the extent to which the critical thinking skills-based Student Worksheets (LKPD) developed in this research are applied after the learning activities to improve the critical thinking skills of 11th-grade Social Sciences students at MAN 1 Medan. The results of the students' critical thinking skills test in each replication class are analyzed based on pre-test values, post-test values, and the acquisition of n-gain.

Testing before (pre-test) and after (post-test) is based on critical thinking skills indicators, including clarification, assessment, inference, and strategy. The results of pre-test and post-test scores for 11th-grade Social Sciences students at MAN 1 Medan in replication classes I and II can be found in Tables 1 and 2 below.

Table 1.
Pre-test and Post-test Results in Replication Class I

Indicators of Critical Thinking Skill	Average Scores			
	Pre-Test	Post-Test	N-Gain	Categories of n-Gain
Clarification	40,93	82,00	0,68	Medium
Asessmen	40,62	79,07	0,65	Medium

Inference	39,68	81,50	0,69	Medium
Strategy	36,26	78,76	0,67	Medium

Table 2.
Pre-test and Post-test Results in Replication Class II

Indicators of Critical Thinking Skills	Average Scores			
	Pre-Test	Post-Test	N-Gain Gain	Categories of N - Gain
Clarification	20,18	76,69	0,71	High
Asessmen	21,61	77,00	0,71	High
Inference	23,02	75,01	0,70	High
Strategy	21,87	79,29	0,73	High

From Tables 1 and 2, it can be observed that Replication Class I achieved an average n-gain categorized as high, indicated by an n-gain value of 0.68, while there was an increase in the average n-gain in Replication Class II to 0.71. The most dominant critical thinking skills indicator in Replication Class I is the variable formulation indicator, achieving an n-gain of 0.71. Meanwhile, in Replication Class II, the data analysis indicator has the highest n-gain, specifically at 0.73.

In this research, the implementation of learning activities in each replication class can be considered good, with a reliability level reaching 83% for Replication Class I and 93% for Replication Class II. The reliability of learning activities in each replication class is influenced by the crucial role of the teacher in providing assistance (scaffolding) to the students. This indicates that the Student Worksheets (LKPD) developed in this

The high readability level is supported by the validation results of the Student Worksheets (LKPD) in three aspects or assessment components: presentation format, language, and content. The assessment results for each of the three evaluation components show reliability percentages of 93.72%, 97.58%, and 94.73%, respectively.

The effectiveness criteria refer to the extent of the implementation of Student Worksheets (LKPD) based on critical thinking skills developed in this research after the critical thinking skills learning activities for 11th-grade Social Sciences students at MAN 1 Medan. Students' critical thinking test scores in each class assessment are analyzed based on pre-test, post-test, and n-gain scores. Pre-test and post-test are based on critical thinking ability indicators, including clarification, evaluation, inference, and strategy.

The n-gain values reflect the observation results of the learning activities in the two assessment classes, indicating the teacher's ability to motivate students to actively participate in the learning process. Additionally, the teacher successfully communicated the learning objectives, especially in terms of creating awareness and conveying the material beforehand. The teacher plays a crucial role in providing support from the

beginning of the learning process and gradually reducing that support to create opportunities for students to take responsibility for problem-solving. In the learning activities, the teacher's role is vital in guiding students directly. The teacher's participation goals include guiding students to think according to experimental procedures, focusing students' attention on crucial aspects, optimizing learning time, and supporting students throughout the learning and problem-solving activities.

CONCLUSION

The Student Worksheets (LKPD) developed in this research meet the criteria for both validity and effectiveness, making them suitable for implementation in learning activities. The validity of LKPD was examined through readability, while the effectiveness of the instructional tool encompasses the critical thinking skills of students after the implementation of learning activities using the developed LKPD in this research.

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