

# 17. Hayatul Husna\_Development of Student Worksheet

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## Development of Student Worksheet (LKPD) based on STEM (Science, Technology, Engineering, and Mathematics) to Improve the Critical Thinking Skills

Hayatul Husna

### ABSTRACT

Based on the results of observations, it shows that the development of LKPD is not optimal, especially in science learning with water cycle material which should be adapted to developments in the 21st century, as science learning is fun learning if it is created well. The 21st century requires students to have various skills, one of which is critical thinking skills. because students are required to be more responsive in analyzing, solving problems and solving problems in the learning process. The aim of this research is to develop and determine the feasibility of STEM-based LKPD with water cycle material for fifth grade elementary school students. This research method is Research and Development (R&D), which is a research method used to develop or validate products used in education and learning. The results of the research show that the process of developing LKPD to train critical thinking skills consists of three stages, namely preliminary study, product development, and test the product. The LKPD was validated by three expert validators, namely design expert validation, material expert and language expert with respective scores of 84.37%, 94% and 91.42% with very feasible criteria. So, it can be concluded that this STEM-based LKPD with water cycle material is suitable for use as a learning companion for students to improve students' critical thinking skills

**Keywords:** STEM LKPD, critical thinking, water cycle

### INTRODUCTION

STEM is a learning approach that connects four fields, namely science, technology, engineering and mathematics into one holistic whole. The goal of STEM in the world of education is in line with the demands of 21st century education, namely that students have scientific and technological literacy skills that can be seen from reading, writing, observing, performing scientific skills, and being able to develop the competencies they already have to apply them in facing problems in everyday life. days related to the field of STEM sciences (Jauhariyyah, 2017).

As the 21st century demands that education must be linked to science, technology, engineering and mathematics, STEM-based LKPD is very necessary so that education is not left behind. However, not all schools can implement STEM-based LKPD, due to several factors, one of which is limited facilities at the school. Mastery of Science and Technology (IPTEK) is currently an important key in facing future challenges. Various challenges that arise include improving the quality of life, equitable development, and the ability to develop human resources.

Learning tools are needed to support the achievement of learning goals. Student Worksheets (Permendikbud, 2013) are a comprehensive learning tool in the learning process. Textbooks need to be developed because they can help teachers deliver textbooks. One of the government's efforts to improve the quality of education is through the development of teaching materials (Bappenas, 2013). Teachers need to develop their own LKPD to activate students' learning abilities, improve critical thinking abilities, and improve learning outcomes.

Critical thinking skills according to Stobaugh (in Azizah 2020, p. 62) that critical thinking is deeply reflective in making decisions and solving problems to analyze situations, evaluate arguments, and draw conclusions. Someone who thinks critically comes to full conclusions about how to solve it, and is able to look for supporting references. STEM (Science, Technology, Engineering, and Mathematics) is a new method of educational development that integrates

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