

## ABSTRACT

**Feby Nabila Safira, IDN. 4202131001 (2024). Development of Student Worksheet Oriented Learning Cycle 7-E to Improve Students' Critical Thinking Skills in Reaction Rate Materials.**

Critical thinking skills are skills that students must be mastered in 21<sup>st</sup> century learning. However, students have not mastered them because learning resources that can improve students' critical thinking abilities are still not available so students' critical thinking abilities are still low. The purpose of this research is to 1) find out the results of the student worksheet needs analysis used at MAPN 4 Medan; 2) determine the feasibility level of the student worksheet oriented learning cycle 7-E based on the BSNP assessment criteria, and; 3) determine students' thinking abilities after using student worksheet oriented learning cycle 7-E. This research uses methods and media development with a 4D model. The results of 1) The needs analysis state that students need teaching materials in the form of learning cycle 7-E oriented student worksheet on reaction rate material and all students agree if teaching materials are developed in the form of 7-E learning cycle oriented student worksheet on reaction rate material to support learning activities ; 2) The feasibility level of the 7-E learning cycle oriented student worksheet on reaction rate material based on the BSNP assessment resulted in an average percentage of 96.6% with very high and valid/feasible criteria results obtained; 3) Based on students' responses to the 7-E learning cycle oriented student worksheet on the material, the reaction rate was 90%. This shows that the student worksheet developed is very interesting for students, so it can be used as a supporting medium in chemistry learning, and finally 4) The results of students' critical thinking abilities after using the 7-E learning cycle oriented student worksheet achieved quite a high increase proven by the N-Gain Score of 0.81 in the high category, which indicates that the application of this media is very good.

**Keywords:** Reaction Rate, Student Worksheet, Learning Cycle 7-E, Critical Thinking.