

# **COOPERATIVE LEARNING BASED EXPERIMENTS ON BUFFER SOLUTION MATERIALS ON LEARNING ACHIEVEMENT AND SCIENTIFIC ATTITUDES OF SMA NEGERI 1 MUNTILAN STUDENTS**

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## **ABSTRACT**

The purpose of this study was to determine the differences in experimental-based cooperative learning with conventional methods of learning achievement and scientific attitudes of students in the buffer solution material.

This research was carried out using an experimental method. The population of this study were all students of class XI Science at SMAN 1 Muntilan with 7 classes. The research sample was taken as much as 2 classes, consisting of class XI IPA 1 as the experimental class and class XI IPA 2 as the control class. The sampling technique was carried out by purposive sampling. The instrument used in this study consists of three, namely: (1) test instruments in the form of posstest questions in the realm of knowledge to measure learning achievement; (2) non-test instruments in the form of questionnaires in the realm of attitude and observation sheets in the realm of skills to measure the development of scientific attitudes. Data analysis techniques using non-parametric mann-whitney test statistics.

Based on the results of the study can be concluded: (1) There is no significant difference in experimental-based cooperative learning on student learning achievement. (2) There is no significant difference in experimental-based cooperative learning on students' scientific attitudes in the realm of attitude, and there is a significant difference in experimental-based cooperative learning towards students' scientific attitudes in the realm of skills.

***Keywords: Experiment-Based Learning, Conventional Methods, Learning Achievements, Scientific Attitudes. Buffer Solution.***