ABSTRACT

NUR FADILLA: The Effect of Collaborative Learning Models on High School Students *Problem-Solving* Skills in the Topic of Temperature and Heat. **Physics Education Program, Faculty of Teacher Training and Education, Malikussaleh University, 2026**

This study aims to determine the influence of collaborative learning models on the *problem solving* ability of high school students on temperature and heat materials. This study uses a quantitative approach with *quasi experiment* methods and *nonequivalent control group design*. The research was carried out at MAS Syamsuddhuha by involving grade XI students. The sampling technique used *purposive sampling*, which consisted of 44 students, namely 22 students in class XI-Rafah as the experimental class and 22 students in class XI-Jenin as the control class. The experimental class was given treatment using a collaborative learning model, while the control class used *the Direct Instruction model*. The data collection technique was carried out through a written test using an instrument in the form of 10 description questions given during *the pretest* and *posttest*.

The results showed that the average *pretest* score in the experimental class was 15.27 and in the control class was 14.09. After being given treatment, the average *posttest* score of the experimental class increased to 90.68, while the control class obtained an average of 47.18. The results of *the N-Gain* analysis showed that the increase in students' *problem-solving skills* in the experimental class was 89.05% in the high category, while in the control class it was 38.49% in the medium category. The results of the prerequisite test showed that the data was distributed normally and homogeneously. Furthermore, the results of the hypothesis test using *the Independent Samples t-test* obtained a significance value (2-tailed) of $0.000 < 0.05$, so that H_0 was rejected and H_a was accepted. These results show that the collaborative learning model has a significant effect on the *problem-solving ability of* high school students in temperature and heat materials.

Keywords: collaborative learning model, problem-solving ability, temperature and heat, physics learning.