

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1. Conclusion

Based on the results of the research and discussion that have been described, the conclusions obtained in this study are as follows:

1. The validity of the e-module that has been developed can be concluded with very valid criteria the overall average percentage of the two validators got a result of 95.38%.
2. The level of practicality of the e-modul that has been developed in this research obtained results based on student responses in small group tests of 85 %, student responses in large group tests of 96,85 % and subject teacher responses of 90% with very practical criteria. So it can be concluded that the average result of the overall percentage of respondents is 90,62% with very practical criteria.
3. The level of effectiveness of the physics e-module on the mechanical wave material based on problem based learning in high school that has been developed is in the medium category. This is based on the results of the average N-gain score of 0.68. So that the e-module developed is effective in improving student learning outcomes.

## 5.2.Suggestion

Based on the above conclusions, the researchers put forward several suggestions in overcoming the problems found in the field:

1. To get maximum improvement in the e-module, researchers suggest to conduct validity tests by validators of at least two people in each field, both material, media, and learning experts.
2. To make a problem-based learning module, it must be adapted to the problems that arise in the surrounding environment so that these problems can be directly felt by students so that observations of the surrounding environment are needed.
3. E-module problem based learning on mechanical wave material assisted by Flip PDF Corporate which was developed so that it can be developed on other physics materials.

