CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The research result was found that learning states of matter using PhET mobile application improve students' understanding which is determined by normalized gain <g> 0.58 and also students' interest. This research then has the following conclusions:

1) The implementation of PhET simulation conducted in fifth meeting which are pre-test, post-test and three meeting of learning activity. All the activities are done during the implementation of PhET simulation in the teaching-learning of states of matter concepts, it means the implementation percentage in this research have achieved 100%. The perfect implementation of 100% doesn't mean that there is no difficulty during the implementation of PhET simulation in teaching learning. The author finds it difficult in introducing the PhET simulation to the classroom and to control the students in using the simulation, because the PhET simulations have many attractive simulations other than States of Matter simulation and the classroom activity was hands-on activity that let students use their mobile phone to explore the simulations.
2) PhET simulation has a positive impact towards students' understanding of States of Matter concept. This conclusion is based on the result of the students' average pre-test and post-test of States and Matter concept. PhET simulation also improved students' cognitive level of C1 (remembering), C2 (understanding) and C3 (applying), which were indicated from the result of the normalized gain <g> value each cognitive level. Based on the data obtained in this study, there is a significant improvement in students' understanding in learning States

of Matter topic using PhET mobile application. So the hypothesis H_1 is accepted in this study.

3) After implementing the PhET simulation in teaching-learning of States of Matter concept, it found that students showed medium to very high interest in learning States of Matter using PhET simulation. They are very interesting when they used PhET simulation in learning States of Matter concept. The reason is because the abstract concept in States of Matter can visualize by PhET simulation and help students to explore more about the particles of an object. The result score of the questionnaire before and after implementing PhET simulation in teaching-learning showed improvement means that students more interest in learning States of Matter with PhET simulations.
4) There is a correlation between students' understanding and students' interest in learning States of Matter concept that indicates from the result of Pearson Correlation is 0.330 that can be categorized as medium correlation. Thus, the higher students' interest in learning will show higher students' understanding.

5.2 Recommendation

The author admitted that there are still several aspects to be improved in order for the research to be a highly qualified and accurate. Therefore, the following are the recommendations in order for the next future research to be conducted by any other researchers out there:

1) The scope of C1, C2 and C3 are too small, so it is better to add another cognitive level, which are C4 (Analyzing), C5 (Evaluating), C6 (Creating) in order to really investigate whether PhET Simulation has a powerful positive effect towards students' understanding.
2) Students' Interest Questionnaire with complete indicators and rubrics should be really improved in order for it to become more focused into interest.