

CHAPTER V

CONCLUSION, IMPLICATION, AND RECOMMENDATION

5.1 Conclusion

According to the research question and the research finding that has been conducted, the researcher summed up several conclusions. First the implementation of water treatment using plant modified in learning activities has been running according to the learning design that has been made previously. The implementation is conducted in grade 7 on the environmental pollution topic.

The implementation of water treatment using plant modified has an impact on students' sustainable consciousness and system thinking competency. Based on the Wilcoxon test result, there is no significant difference after students complete all the stages of learning activities. But there is an improvement after doing the treatment, which is 15% based on Rasch analysis result. For negative rank, 5 students experienced a decrease in mean rank, 2 other students had the exact same value, while 13 students experienced positive ranks or increase from pretest to posttest. This is in line with the results of the Rasch analysis, the student who increased logit score in sustainable consciousness was 13 students, and there are 5 student experienced a decrease in logit score. The instrument that was used to measure students' sustainable consciousness was the questionnaire that include knowingness, attitude, and behavior items and linked with environmental, social, and economic aspects.

Meanwhile, in system thinking competency, the test item was used to measure the ability of students. The system thinking competency was built in all stages of the learning process. Based on the Wilcoxon test result, there is significant difference after students complete all the stages of learning activities. There are 3 students who experienced a decrease in mean rank, 2 other students who had the exact same value, and 13 students who experienced an increase in mean rank from the pretest to the posttest. This is also in line with Rasch's analysis. The student who increase in logit score in system thinking competency was 15 students, which is an improvement reached 50% based on the Rasch analysis.

5.2 Implication

Based on the result of this study, it was shown that the use of water treatment using plant modified in enhancing sustainable consciousness and system thinking competency plays a critical role. Because learning models guide the student to improve their awareness and the way they thinking to constructing the prototype. In this study, the project of water treatment is used to improve students' system thinking skills. Through the application of appropriate learning models, it is expected to enhance the system thinking competency of students.

The project of water treatment on student sustainable consciousness in the topic of environmental pollution is not really affect the students' sustainable consciousness. The result shows there are some students who experience a decrease in logit score after learning. The implication is because the environment is quite clean and comfortable. In addition, students still do not really close to the context that discusses about sustainable development goals.

5.3 Recommendation

Based on the findings of this study, various recommendation can be made as future references for other studies such as:

1. Examine the abilities of the students who were sampled in this study. This is important because as researchers, we have to see whether the treatment we provide can match the abilities of students or not, so that we can also predict the chances of learning success.
2. We recommend that at the beginning of learning, we can provide an understanding of the concept of sustainable development goals first to students. So that students can have initial knowledge about the topic. And we can also see whether the treatment used is effective or not, because students already understand the concept and importance of sustainable development.
3. Direct learning activities will provide different perspectives on student consciousness, for example observing pollution conditions directly then analyzing problems not just by showing videos. So, it is important to plan the time well to do that.

4. Direct scientific investigations in detail. Starting from the initial stage to the final stage, design more specifically so that the expected learning can be achieved, and students are able to go through all stages of STEM learning correctly to create a better prototype.