

Chapter 6 Conclusions and Future Works

6.1 Conclusion and Suggestion

In this study, a system that has been developed was proposed to facilitate the fifth-grade elementary school students learning fraction in an authentic context. This study was performed to evaluate the effect of system usage on the students' learning achievement in fraction learning. Some finding was observed by the experiment. Students in this study perceived that the proposed system was useful because it facilitates them to study fraction in an authentic context. Moreover, students also perceived that the proposed system was easy to use and easy to learn because it has an excellent user interface, has a good user experience design, and they not easy to make a mistake when they operate the system. Overall, the students felt satisfied learning fractions by using features in the proposed system.

This study found that students who learned fraction using the proposed system have better performance compared to the traditional teaching method proven by the learning achievement. Some interesting finding was found in this study that the quantity of assignment by the students does not affect their learning achievement. However, the completeness of their annotation in assignment affects their learning achievement, because the completeness of the annotation in assignment affects to their annotation score. So, more students make a complete annotation in the assignment, higher the learning achievement.

Other findings in the assessment of assignment where we utilized the three scaffoldings and authentic contexts to the students' peer assessment could improve the quality of the students' peer assessment. The students' peer assessment becomes meaningful compared than the students' peer assessment using five-scales rating. The reason was in the peer assessment using three scaffoldings and authentic contexts; we provide three guidance to the students for assessing their peer record: the explanation correctness, the numerical symbol correctness, and the graphical visualization correctness. Moreover, the students also need to confirm their peer record through location-based peer sharing. So, with this mechanism, the students would more focus on what they should assess. Different from the five-scales rating, which there was no guidance to the students that can assist the students on what should they assess from their peer record. The result of peer assessment used three scaffoldings, and authentic context was strengthened by the teacher assessment score. Because, from the assessment side, only peer assessment using three scaffoldings and authentic context and teacher assessment score correlate to the students learning achievement. Even the teacher assessment score has a higher

correlation, but at least the peer assessment using three scaffoldings and authentic context was meaningful.

The exciting finding also found in the lag sequential analysis we conducted to the students who use the system for learning fraction in an authentic context. We found that most of the students just only keep following the sequential process in the assignment. Even some students did a step back to the previous step.

Finally, we suggest extending the number of users of the system, and the number of location-based fraction problem so that more data can be recorded. So, we hope in the future; the more in-depth statistical analysis can be done.

6.2 Future Work

In the future, we would like to investigate the effect of the use of Authentic U-Fraction in more advanced features and technological supports for authentic context which will involve more students and extend the learning duration of the experiment.