CHAPTER V
CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

5.1 Conclusion

As the obstacle of learning, misconceptions which refers to the inappropriate of understanding also occur in human circulatory system. Prior diagnostic tests have been developed but still less efficient in the term of accuracy and time, so four-tier diagnostic test is need to be carried out. This test is appropriate because has the advantage as students cannot speculate in choosing their answers. This study is a quantitative study with a survey design. The instrument used is a four-tier diagnostic test using multiple choice questions developed from 14 open-ended questions in preliminary study To obtain an appropriate and accurate instrument to diagnose misconceptions, the validity and reliability test was conducted through expert judgment analysed by Aiken's test and student validation analysed by SPSS. After revision, the research data was collected from several schools using an online form. Then the answers were statistically coded and categorized based on student conceptions, such as scientific knowledge, false positive, false negative, misconceptions, and lack of knowledge. The results showed that each concept has the five categories of student conceptions which are compatible with previous studies even though they use different diagnostic methods. Other findings showed that the percentage of lack of knowledge which reveals the lack of confidence of overall student responses was the highest in each concept, and the commonly occurring concepts showed that the percentage of misconception was higher than the percentage of scientific knowledge of overall student responses, which was caused by several factors that have been found in several previous studies,such as incompleting topic, teaching method, and inappropriate learning sources to be used.

5.2 Implications

The implication of this research serves to assist teachers in exploring and improving the teaching and learning process in accordance with learning objectives. By achieving the goal, it is hoped that students will be able to have appropriate scientific knowledge, especially on the topic of the circulatory system. Apart from that, with the results of this four-level diagnostic, teachers are expected to be more aware of students' abilities and know obstacles and how to overcome existing problems. In this way, students are able to get the right and appropriate concepts, so that conceptual errors can be avoided or even no longer exist in the learning process.

5.3 Recommendations

The instrument used in this study is appropriate as a misconception diagnosis tool. However, to get better results in future research using a Four-Tier Diagnostic Test will be more effective, if it is used directly after the topic has been studied in class. It is also recommended to pay attention to ensuring that students in the sample have studied the topic as a whole, so that the misconceptions results obtained will be more accurate. It could also be important to introduce the use of a four-level diagnostic test instrument in stages. Additionally, it is important to create an assessment form for more specific expert judgment, such as the desired indicators, language use, and possibly the level of difficulty of the questions to be answered by junior high school students. It is also important to add information through interviews with teachers and/or students to get more specific and in-depth misconception results.

Through this research, it was found that the teacher is the main key to success in learning about the human circulatory system. Therefore, before the teacher starts teaching, it is expected that the teacher is able to master the learning concept well to avoid misconceptions caused by the condition of students who come from various backgrounds. Teachers are also advised to provide and deliver topics through the correct selection of teaching methods and learning resources thoroughly, especially in providing learning evaluations in the form of feedback/reflection to all students.