

## **CHAPTER V**

### **CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS**

#### **5.1 Conclusions**

Based on the results and discussions of this research, the implementation of a four-tier test provided useful information regarding conceptions about human excretion among junior high school students. The profile of students' conceptions about human excretion identified as follows: SK 23.3%, FP 11.8%, FN 7.8%, M 29.7%, and LK 27.4%. Students held significant misconceptions about human excretion. Furthermore, it was evident that many students had poor comprehension about human excretion, as indicated by the low percentage of the SK category compared to LK and M categories.

There are misconceptions found in the three subtopics involving the ten concepts tested. Students held misconceptions related to all these concepts, with nine of them showed significant misconceptions as evidenced by the percentage of students' misconceptions exceeding 10%. The common students' misconceptions about human excretion discovered in the subtopic of structure and function of human excretory system, specifically about the sweating for body thermoregulation (70.0%) where students believed that sweat is the result of burning fat inside the body. Students also exhibited a significant misconception regarding the structure and function of the skin in the excretory system (48.8%), where they mistakenly assumed the oil gland to be the hair follicle and the sweat gland as the duct of the sweat gland. This proves that misconceptions related to one particular concept have the potential to cause misconceptions about other concepts.

#### **5.2 Implications**

The results obtained from this research hold significant implications. A four-tier diagnostic test can be utilized to identify students' conceptions. This test can effectively differentiate between misconceptions and lack of knowledge in students' conceptions. Additionally, it has the capability to distinguish various forms of misconceptions, including complete misconceptions, false positives, and false negatives. Moreover, the interviews conducted can uncover the underlying causes of misconceptions that manifest in students. Based on the conclusions of this research, improvement of teaching methodologies to assist students in constructing

a more comprehensive scientific understanding while eliminating misconceptions related to the topic of human excretion is important. Furthermore, engaging in discussions surrounding common misconceptions linked to the topic should be implemented in classroom. This serves as a preventative measure against the development of erroneous beliefs among the students.

### **5.3 Recommendations**

There are several recommendations based on the results from this research. The first is for the teacher, they can use the four-tier test to identify students' conceptions by implementing it as a pretest and post-test. If this is not feasible, teachers can explore misconceptions by reviewing existing research to gain insights into common issues that students might have. It allows teacher to identify students' conceptions so that they can plan learning strategies according to students' needs because teachers play a crucial role in assisting students to develop a correct comprehension of the concepts, instead of contributing to the formation of misconceptions among students.

The second is for the future researchers, it is highly recommended for conduct an in-depth literature review of the scientific material studied from various textbook and journal sources. Understand the flow of making instruments well by increasing reading sources also important, it can alert to potential biases and pitfalls that can undermine the quality of instruments. During the development of the instrument, it is better to do an open-ended question in the pilot test about the reason for the answer to the main question, the aim is to be aware of possible misconceptions that are not known yet as well as those reported in the literature. Therefore, for each indicator or concept being tested, it is better to be represented by several questions. Using a variety of questions enhances accurate measurement of the intended construct, aiding in mitigating response bias or errors that might arise from ambiguous question.