

## **CHAPTER V**

### **CONCLUSION AND RECOMMENDATION**

#### **5.1 Conclusion**

Understanding of the Solar System and the Earth is challenging to most students, with lack of knowledge and misconceptions have been the barrier to appropriate learning. In order to facilitate appropriate learning, the Four-Tier Diagnostic Test was conceptualized through a meticulous process where an initial study was carried out first and subsequently turned into a more sophisticated four-level model. Validity and reliability of the test were established through expert judgment and statistical tests before the test was given to students in several schools. Findings in this study showed that 33% of students lacked basic knowledge of Earth and Solar System, which identified gaps in conceptual knowledge. Misconceptions in 25% of students were a reflection of common mistakes in conceptualizing scientific ideas. Only 21% of the students demonstrated high scientific knowledge, which indicates the need for enhanced learning interventions. In addition, False Positive answers reached 12%, while False Negative answers reached 10%, indicating inconsistency in students' confidence when answering questions. The results of this study emphasize the importance of strengthening educational approaches through interactive and engaging teaching methods. Providing hands-on activities, enhancing learning materials and integrating inquiry-based learning can help students develop a clearer and more accurate understanding of the Earth and Solar System.

#### **5.2 Recommendation**

To obtain more accurate and comprehensive results, researchers suggest that the Four-Tier Diagnostic Test be given to a sample of students who have studied the Earth and Solar System topic thoroughly. Thus, the results obtained will be more valid in describing the level of student understanding and the various types of misconceptions that still occur. In order to ensure that students still have their memories of the test, it is also recommended to conduct an interview session with

students immediately after the test is conducted. This is so that students still have strong memories of the material that has been tested and the instruments used, so that the information obtained can be more in-depth and relevant. Not only that, interviews should also involve science teachers as parties who play a direct role in the learning process. By interviewing teachers, researchers can gain greater insight into the sources of misconceptions experienced by students and strategies that can be applied to overcome them. Based on the research results obtained, teachers are expected to evaluate and improve the teaching methods used to be more effective in conveying concepts related to the Earth and Solar System. With improvements in learning strategies, it is expected that misconceptions that occur among students can be minimized, so that they can build a better and deeper understanding of the material being studied.