

CHAPTER V

CONCLUSION, IMPLICATION, AND SUGGESTION

5.1. Conclusion

1. There were the differences between the items construction in PISA assessment and items construction in biology assessment inside the textbook. The PISA item were mostly distributed in the higher order thinking question (C4-C6) while the three textbook arranged by the 2006 curriculum were accumulated into low order thinking question (C1-C3). The assessment inside the book supplemented by 2013 curriculum delineated the most appropriate type of assessment to stimulate students higher order thinking skills which in line with PISA, where the assessment were having the complexity and adapt to suit the real life situations (more contextual). Moreover, this book also contains two unit of biology content of PISA assessment.
2. The findings for the type of question being asked revealed that the PISA assessment mainly composed of four types of question including; simple multiple choice, complex multiple choice, closed constructed responses, and open constructed responses. The format of complex multiple choice were not found inside the three textbook with 2006 curriculum and only 1 item inside the 2013 curriculum. The limited familiarity of the students to the type of complex multiple choice was assumed affect the result of the study.
3. Students' scientific literacy based on PISA assessment in Binjai revealed that the predominantly samples was categorized low literacy (48.92 ± 13.24). The PISA competencies are composed of identifying scientific issue, explain

phenomena scientifically, and using scientific evidence. The score attained for each competency were 46.77 ± 18.77 , 49.48 ± 14.19 , and 46.30 ± 18.69 (low category).

4. The students' responses to each item revealed that there were 12 items includes into difficult item, 20 questions includes into moderate level question and 8 items includes into easy item. The difficult items were appeared might related to the complexity of the question being asked, the unfamiliar settings and long text provided inside the unit as the illustration of the context. Furthermore, the complexity of the diagram, chart, tables, photographs, and the passage of text need students' good reading skills to able solving the issues proposed in the unit of assessment. The Indonesian students reading literacy was also low in PISA assessment were related to the result of science literacy.
5. Even though the mean score of male respondents were higher than the female, the Mann-Whitney U test showed that there were no significant differences between the male and female attainment in scientific literacy and its competencies in identifying scientific issue, explaining phenomena scientifically, and using scientific evidence in both age groups.
6. The Mann-Whitney U test showed the significant differences between the school level where the senior high school outperformed the junior high school significantly in the aspect of and using scientific evidence ($U = 69.801.50$; $P = 0.000$, 1st group data; $U = 5.405.00$; $P = 0.043$, 2nd group data) in both age groups.

5.2. Implication of Research

The implication of the study are lies in the fact that the books arranged based on KTSP curriculum still accumulated in the factual knowledge dimension and assessing students' lower order thinking skills which might be the one possible factor in determining students' success in answering the items. In addition, the absence of the complex multiple choice item in these three textbook and students' limited familiarity with this type of question also estimated affecting the result of cognitive test. Moreover, the development of the questions in books which stimulates students higher order thinking skill need to be reconsider.

The effect of international study also drives a changing in curriculum which shows that Indonesia are in the process of using 2013 curriculum with emphasizing the scientific learning. The finding of the study concludes that the book supplemented with 2013 curriculum were the closed one with the PISA assessment of its format and contextuality. The implementation and the usage of the books published by Kemendikbud with 2013 curriculum might increase students' scientific literacy.

The results of scientific literacy outlines that the predominantly students were having low level of literacy which measured by PISA questions. The low of students' achievement in this case, might related to the construction of the unit which included the long passages text as the illustration of the context of the unit. The students' reading skill and willingness to answer could be viewed as the other factors causing the failure of answering the item.

5.3. Suggestions

1. Educators and publisher should be reconsidering the arrangement of questions which stimulates students' higher order thinking skills and provide problem in real-life situation.
2. The used of book by Kemendikbud which supplemented with 2013 curriculum need to be implemented in order to providing the more contextual teaching and scientific activity.
3. For teachers, it need to make the students be accustomed to solving the issues related to real-life situations so that the knowledge not only being rote but they could be implement it in the daily life situation.