

ANALYSIS OF KNOWLEDGE TOWARD GENERAL BIOLOGY OF FACULTY MATHEMATIC AND NATURAL SCIENCES' STUDENTS STATE UNIVERSITY OF MEDAN

Naimatussyifa Daulay^{1*} and Hasruddin^{2*}

¹Department of Biology, State University of Medan, Medan, Indonesia

*Corresponding author: syifalovato@gmail.com; hasruddin_lbsmdn@yahoo.com)

Abstract- this research aims to know knowledge toward general biology 2 of faculty mathematic and natural sciences' students state university of medan (fmipa) included mathematic, physic, chemistry, and biology department. The research was conducted in fmipa state university of medan with population were all of students in education class fmipa of 4th semester and the sample was taken by cluster random sampling, by takes one education class in each department. The kind of this research is descriptive quantitative. The total of knowledge test is 30 items number was validated before used to students is by expert validator in general biology 2 also test instrument by using validity test, reliability test, and difficulty level. The result of research are students for biology department got better knowledge toward general biology 2 with categorized less (56.6%), good (26.7%), and very good (16.7%), then continue for chemistry department with categorized less (76.7%), good (20%), and very good (3.3%), mathematic department with categorized less (86.7%) and good (13.3%), and last physic' department with categorized less (96.7%) and good (3.3%).

Keywords: students' knowledge, general biology 2

1 INTRODUCTION

Biology is a unique discipline where experiments with living organisms can take place both in the laboratory and in the field. However, increasing use of virtual environments instead of practical investigations in biology has recently been documented [3]. How do students regard biology compared with other subjects? Do boys and girls prefer different topics? Several studies have been concerned with attitudes toward particular disciplines like physics [1] or chemistry [5] but few studies have focused on students attitudes toward biology. Moreover, the majority of investigations were carried out with single-age classes which did not examine possible effects of curriculum progress on students' attitudinal changes. Information about students' interests may help teachers to devise strategies to enhance students interest in biology [6].

[4] reported that a majority of the students (57%), however do not want to have biology lessons more frequently. Although 16% of the respondents stated that they hate biology lessons, the nature, and biology subjects have not been found as "strange" by 68% of respondents. One of the most striking results of this dimension is that, most of the students (83%) enjoy working with living organisms during lessons. 47% of the students agreed that learning biology improves the quality of life, 33% of them stated that they do not know the answer. All items of dimension were significantly and positively correlated with each other. Evaluation showed that the highest score was obtained for the item which asks about the necessity of biology knowledge for understanding of other courses. And that the lowest was belong to the item which states that, biology is helpful to develop conceptual skills. The importance of biology can summarized as that, they believe in the importance of knowledge of biology, but according to them, biology is not one of the essential issued of their own lives.

In Faculty Mathematic and Natural Science (FMIPA) State University of Medan, after observation and interview directly, there are students still littering, the trash is still in the classroom, and also around building in FMIPA. The researcher gave 10 questions to 40 students in FMIPA State University of Medan. The question is the form of essay test which include about knowledge and attitude of students which relates to General Biology 2 (Appendix 4). After the students answer the questions, there are still 32.5% of students who understand about General Biology 2 topics, 20% of students are middle, and 47.5% of students are low about General Biology 2. Some of students says the lecturer variation way of learning general biology is lack where class condition and learning process is rigid.

2. METHODS

2.1 Location and Time

This research is conducted in Faculty of Mathematics and Natural Science, State University of Medan including Mathematic, Physic, Chemistry, and Biology Department. This research is planned for range February-May 2016, which include proposal preparation, research instrument preparation, research instrument standarization, collecting data, and taking conclusion.

2.2 Population and Sample

Population of this research is students of Faculty of Mathematics and Natural Science State University of Medan exactly who are in the 4th semester then sample is education class A for mathematic, education class B for physic, education class B for chemistry, and education class C for biology. All of taken by cluster random sampling.

2.3 Kind of Research

Researcher use descriptive research methodology.

2.4 Research Procedure

The research conducted in State University of Medan exactly in the faculty mathematic and natural sciences (FMIPA), then the researcher use General Biology 2 knowledge multiple choice to examine the students knowledge. The knowledge test must be validated first by validator for construct and content. The construct is by Mr. Dr. Hasruddin, M.Pd and content is by Mr. Drs. Lazuardi, M.Si. After that the students of FMIPA State University of Medan exactly who are in the 4th semester are given the General Biology 2 knowledge multiple choice. For this test, firstly the researcher ask the students greeting then the researcher gives 30 questions of multiple choice to test the knowledge. After that, the researcher gives 40 minutes to finish the test. After 40 minutes, the researcher ask the students to collect the test. No students is allowed to cheat others, the researcher control the class situation. After that, researcher collect the data and then, the researcher does data analysis and finally make some conclusion.

2.5 Research Instrument

The researcher formulated 30 number of questions in General Biology 2 multiple choice test to examine students knowledge.

2.6 Analysis Technique

Analysis technique of data is by:

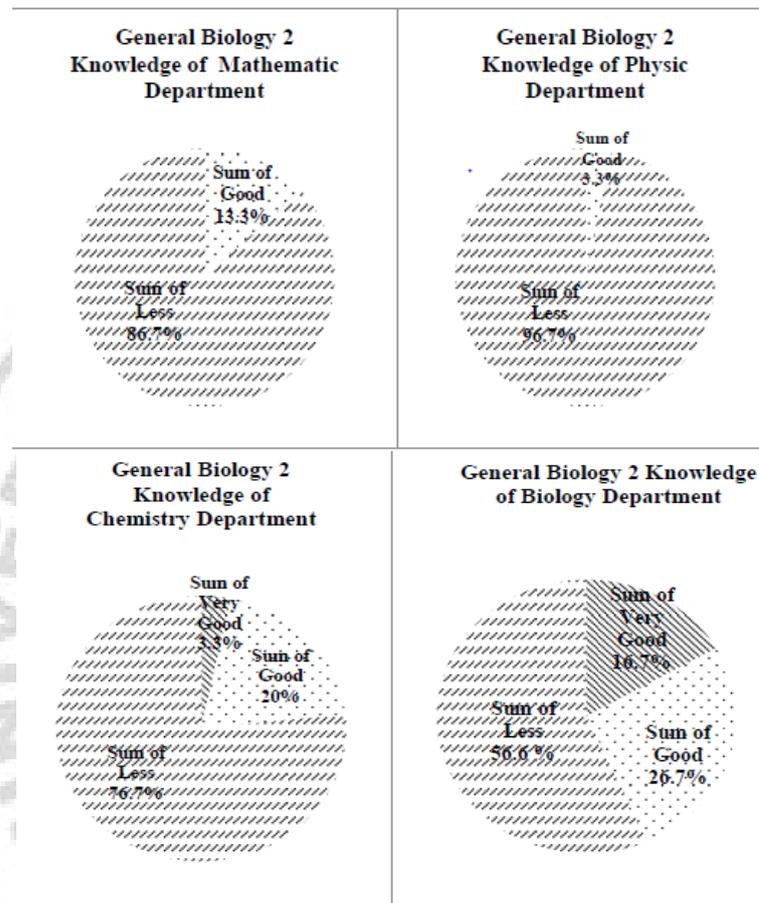
$$\text{Value \% of students answer} = \frac{\text{Scoreobtainedbys}}{\text{maximalscor}} \times 100\%$$

From the answer obtained for each item is analyzed by noticing how many correct answers and how many tests were answered correctly by the students. if more than half (50%) of total students answered correctly of each item so students considered to get very good knowledge, but if less than half (50%) the number of students answering considered to get not good enough knowledge.

3. RESULTS AND DISCUSSION

From the diagnostic test, researcher got datas which are from each department. Where biology students are got better knowledge than other students of FMIPA State University of Medan. It's continued by chemistry, mathematic, and physic' students.

Table 1. Students' Knowledge toward General Biology in the 4th Semester of Mathematic, Physic, Chemistry, and Biology Department State University of Medan.



Overall, about half of the knowledge questions were answered correctly by goes to half of all respondents in biology department, but some of them still get less score. It means that students had less knowledge to describing about environmental ethic, bad activity that damaged environment, human population factors, and global warming that actually the students must be aware about that.

For physic' students seem have poor knowledge about General Biology 2. It can be seen almost all respondents got less score. From the test result, the researcher found that almost questions seem very difficult to the students. But the researcher take five range questions which are the question number 6, 7, 12, 15, and 27 seem was very difficult questions. It can be seen many students answer wrongly. In contrast, from the test result of mathematic' students, the researcher found that they answered correctly than physic' students, but the researcher take 5 five questions that was difficult which are numbers 16, 18, 24, 27, and 29. In the same number physic' and mathematic' students less about topic *Reduce, Reuse, and Recycle* (3R). Its clear that they have less basic concept about 3R and not understand what for to learn it.

For chemistry' students, they have better knowledge than physic' and mathematic' students, but researcher take range questions which are the question number 8, 20 ,25 ,29 and 30 seem very difficult questions. It can be seen that many students answer wrongly. The most topics are about human population, ecology nature, and earth layer. This topic is abstract to learn by the students.

This result because that science curriculum probably might not provide enough place for teaching General Biology 2. The learning-teaching is still based on outdated educational books and solely on lecturer classes which tends to lead to a shallow notion of important General Biology 2 concepts. It would, therefore, be a difficult task for these students to behave as critical and active citizens in a constantly changing society and act directly about their environment, because they do not understand clearly about what learn in classroom.

This should be like [2] says that to protect and preserve the environment, emphasis should be given to environmental education systems in both formal and non formal. The formal education system, teacher plays very significant role for developing great awareness about environment.

Like reported by [4] evaluation showed that the highest score was obtained for the item which asks about the necessity of biology knowledge for understanding of other courses. And that the lowest was belong to the item which states that, biology is helpful to develop conceptual skill. The importance of biology can summarized as that, they believe in the importance of knowledge of biology, but according to them, biology is not one of essential issues of their own lives. Since the 1970s, there is a consensus that environmental education is crucial for achieving the goals of sustainable development, by creating an environmentally literate citizenry capable and motivated towards environmentally responsible lifestyles [7].

Also according to the interview data by FMIPA students, the learning-teaching process of General Biology 2 is only theory in classroom without no variation learning and teaching of lecturer to make students understand about what learn. There is no video for watch about phenomenon related to environment so they only focused to books and not understand clearly about what read.

4. CONCLUSIONS

There are some conclusions from this research, it can be seen as follows: Biology department got better knowledge toward General Biology 2 with categorized less (56.6%), good (26.7%), and very good (16.7%), then continue for chemistry department with categorized less (76.7%), good (20%), and very good (3.3%), mathematic department with categorized less (86.7%) and good (13.3%), and last physic' department with categorized less (96.7%) and good (3.3%).

5. ACKNOWLEDGEMENT

For ALLAH SWT who gives healthy and good time for me. For beloved parent, Drs. H. Ahmad Riadi Daulay, M.Ag and Dr. Nurawati Lubis, MA. For beloved siblings Rabiah Afifah Daulay, S.Pd and Dira Anisah Ulfah Daulay. For thesis supervisor Mr. Dr. Hasruddin, M.Pd who support and give good suggestion until this thesis finished.

REFERENCES

- [1] Angell C, Guttersrud., Henriksen EK., & Isnes A., 2004, "Physics frightful, but Fun. Pupils and Teachers Views of Physics and Physics Teaching. *Science Education*", 88(5) pp. 1-24.
- [2] Larijani, M, 2010, "Assessment of Environmental Awareness Among Higher Primary School Teachers", *Journal Humaniora Ecology*, 31 (2) : pp. 121-124.
- [3] Partridge N., 2003, Science Out of the Classroom, *Journal of Biological Education*, 37(2) pp. 56-57.
- [4] Pavol, Prokop., 2007, "Slovakian Students Attitudes Toward Biology", *Eurasia Journal Mathematics, Science and Technology Education*, 3(4) pp. 287-295.
- [5] Salta K and Tzougraki C., 2004, "Attitudes Toward Chemistry Among 11th Grade Stdents in High Schools in Greece", *Science Education*, 88(4) pp. 535-547.
- [6] Uitto A, Juuti K, Lavonen J and Meisalo V., 2006, "Students Interest in Biology and Their Out of School Experiences", *Journal of Biological Education.*, 40(3), pp. 124-129.
- [7] UNESCO-UNEP, 1992, UNCED: The Earth Summit, *Connect*, 17(2), pp. 1-8.