

ANALYSIS PROFESIONAL COMPETENCY OF BIOLOGY TEACHERS AT SENIOR HIGH SCHOOL LEVEL IN ACEH TAMIANG REGENCY

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Abstract - The objective of this study is to find out how biology teacher professional competency of senior high schools in Aceh Tamiang regency based on mapping graduation of standard competency. This study involved all of the high schools in Aceh Tamiang regency. The population in this study consist of 54 biology teachers. The sample of this study consist of 34 biology teachers by purposive sampling technique. This study conducted by giving national examination test based on graduation of standard competency. This study uses descriptive quantitative research method by using numbering and then the number is explained by using the sentences. The result of study shows that the professional competency of biology teacher in Aceh Tamiang in achieving in graduation of standard competency in biology is excellent (5,88%), very good (52,94%) and good (41,18%). In mapping of graduation of standard competency, the highest percentage is in the third graduation of standard competency, which discuss and analyze connection of the ecosystem component, transform of material and energy and also the human role in ecosystem balance (81,37%). Mean while in mapping graduation of standard competency the lowest percentage is in the seventh graduation of standard competency, which Describing the process of metabolizing carbohydrates and chemosynthesis (52,35%).

Keywords: Analysis, Professional competency, Biology teacher

1. INTRODUCTION

Education is a strategic way to improve the quality of human resources through the learning process. Through education, it is expected to support future development, especially to produce qualified students, namely humans who are able to face and solve the life problems they face.

One of the factors that determine the quality in education is the teacher. Teachers are at the forefront position in improving the quality of human resources as they deal directly with the learners in the learning process. Due to their skills as a teacher, it will be born the learners who are academically qualified, skills, emotional maturity, moral and spiritual (Kunandar 2011).

A lot of research has been done and found that the teacher is a core factor in improving the quality of education, the quality of the teaching profession becomes a necessity. A professional teacher has a set of competence which is required to sustain their duties and functions as a teacher. Professional teachers not only master the science, teaching materials and methods, but also must be able to motivate the learners, have a high skill and are insightful (Suryadi, 2014).

Competencies that form the basis for the assessment of teacher performance are pedagogical, professional, social and personality competencies, as stipulated in the Regulation of the Minister of National Education No. 16 of 2007. The four competencies have been translated into a teacher's competence that should be demonstrated and observed in a variety of activities, actions and attitudes of teachers in implementing the learning or guidance (Anonymous, 2010).

One of the competencies that must be owned by a teacher is Professional Competence. Professional Competence for teachers is an ability that is associated with mastery of learning materials of broad and deep field of study that includes mastering scientific substance which overshadows the curriculum, as well as adding scientific knowledge as a teacher (Suprihatiningrum, 2014).

Results of study by Lodang, et al (2014) concerning Analysis of Professional Competence of Senior High School Biology Teacher in Makassar. The results of data analysis show mastery aspects of teaching materials with an average value of 71.75, the preparation of the teaching program with an average value of 95.40, the implementation of the teaching program with an average value of 91.30, and assess the results and the learning process that have been implemented with an average value of 63.10. Overall the average value of Professional Competence of biology teachers in Makassar is 80.34 with very high category.

Professional Competence of teachers is one part of the teachers' competencies should have. Competent teachers are required to master the Graduation of Standards Competency (SKL) that have been set by the government in the Regulation of the Minister of National Education No. 23 of 2006 which states that to improve the competence of graduates, the government set Graduation of Standards Competency (SKL).

Competency standard is a graduate qualification capability including attitudes, knowledge and skills in accordance with national standards that have been agreed. A teacher should be able to master the whole Graduation of Standards Competency (SKL) on each of the subjects taught. National Examination (UN) is an evaluation of a combination of several competencies that have been taught in class X, XI and XII. Therefore, the whole Graduation of Standards Competency (SKL) are highly expected to be mastered by every teacher.

Research conducted by Rasto et al. (2011) showed that in the subjects of Biology in Garut, the lowest ability of the cognitive processes is to identify and explain, while in the subject matter, the lowest achievement of SKL (the average is above 20 SKL) is on the cells, tissues and organs, classification and biodiversity, the physiology of animals/plants, human physiology and genetics. For Tasikmalaya regency, the lowest ability of cognitive process is to identify and explain, while in the subject matter, the lowest achievement of SKL is on human physiology and genetics.

The low quality of teachers certainly has an impact to the education on an area. Teacher competence becomes urgent in improving the quality of education. If a teacher has a low competence, it would certainly impact on the quality of a student's education. Ultimately, it will have an impact on the human resources of an area.

One of the provinces in Indonesia which still has obstacles in improving the quality of human resources through education is Aceh. The number of teachers who are still lacking and uneven distribution are the problems in education in Aceh.

The results of research by Majid (2014) stated that the quality of education in the province of Aceh is in the top ranking of 25 out of 34 provinces in Indonesia. Development of education sector has not been evenly distributed among the districts/cities in Aceh.

Another problem arose in the education world is the low quality of teachers. This is evident from the results of examination of teachers competency (UKG) 2013 that teachers in Aceh only score 40.66. It means that it is still below the national average which has reached 47.84," said Aceh Education Observer, Dr Nazamuddin Basyah, MA who is also the Vice Chairman of the Regional Education Council (MPD) and the Vice Rector of Unsyiah Cooperation (Serambi Indonesia, 22 May 2014).

Based on data from the Department of Education in Aceh, the average value of examination of teachers competency (UKG) in 2013 in Aceh Tamiang is 40.41, ranks seventh out of 23 districts/cities in Aceh and is still below the national average.

However, the results of UKG that have been implemented, only in the form of a written assessment test, have not been able to demonstrate compliance with the competence of teachers in the field. Thus, it does not depict the full competency assessment. It requires a research of Professional Competence of teachers on materials related to the competency standards set by the government.

2. METHOD

This study is a descriptive research that aims to determine the Professional Competence of high school biology teacher in Aceh Tamiang district in the aspect of mastering biological materials which are based on the Graduation of Standards Competency (SKL).

The population in this study is 54 people. The research samples were taken at random sample of 34 teachers representing the class X, XI and XII that derived from 14 schools and were selected by purposive sampling.

Professional Competence test was conducted using multiple choice questions as many as 40 items about the National Examination (UN) in the period of 2012 – 2015 based on Graduation of Standards Competency (SKL). Each correct answer was given a score of 1 whereas the wrong answers were given a score of 0.

Furthermore, the data obtained would be analyzed using the formulation:

$$P = \frac{F}{N} \times 100\%$$

Description:

P = Percentage

F = Frequency

N = Amount

After the calculation of the answer percentage, the answers were then scored as follows:

$$\text{Score} = \frac{\text{The number of correct answers}}{\text{the number of questions}} \times 100$$

Furthermore, the authors categorized biology teacher competencies based on the score obtained from the instrument used. Here are the criteria for the analysis of Professional Competence of teachers

Table 2. Descriptive Criteria for Professional Competence of Teachers

Range of score	Criteria
33-40	Excellent
25-32	Very Good
17-24	Good
9-16	Poor
0-8	fail

3. RESULTS AND DISCUSSION

Based on research that has been done, the results of data analysis concerning the Professional Competence of high school biology teachers in Aceh Tamiang can be seen in the following figure:

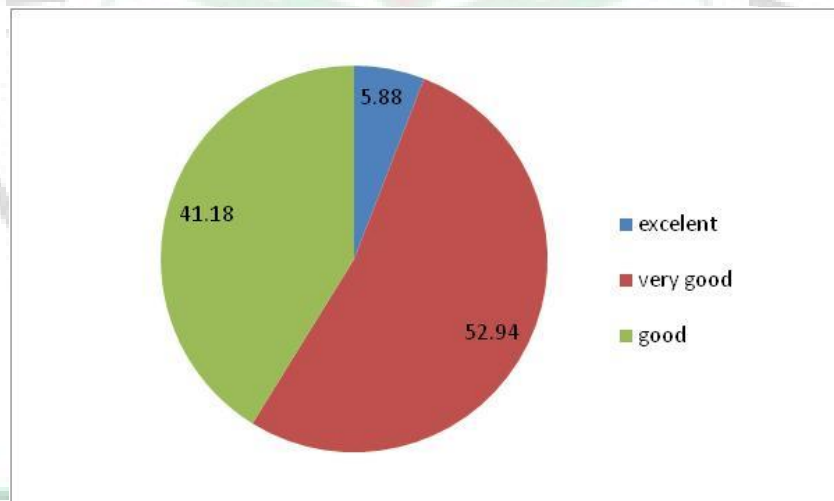


Figure 1. Percentage of the results for Professional Competence of Senior High School Biology Teachers in Aceh Tamiang

Mapping results for Professional Competence of teachers based on Graduation of Standards Competency are shown in the following table:

Discussion

From the results for the professional competence of high school biology teachers in the district of Aceh Tamiang found 5.88% for the criteria of excellent, 52.94% for the criteria of good and 41.18% for the criteria of fair. This shows that the development for biology teachers in Aceh Tamiang is needed to reinforce the biological material for high school biology teachers, especially on certain material which is considered difficult.

Material enrichment may be provided through training activities for teachers or can also be done in the activities of Teacher Development Forum (Musyawarah Guru Mata Pelajaran / MGMP) of high school biology teachers. Development related to the enrichment of materials is deemed necessary because mastery of the material will affect the ability of teachers to guide the students.

According to Sanjaya (2011), the ability in mastering the subject matter in accordance with the field of study that is taught is one indicator of the professionalism of a teacher. The ability to master

the subject matter allows it to guide the learners to meet the competency standards. In line with the description above, Azimir (2012) stated that a professional teacher means having to master the teaching materials before starting the teaching-learning process. If the teachers do not master the teaching materials, they will have difficulty in managing the teaching and learning interactions.

As teacher organizations, MGMP certainly has a series of activities that aim to improve the ability of teachers to be professional. The increase includes several things: understanding and mastering the curriculum, learning tools, teaching materials, methods of effective learning, science and technology-based learning tools and a good learning media (Mahmud, 2013).

Table 3. Mapping Results for Professional Competence of Teachers based on Graduate Competency Standards (SKL) of Biology (N= 34)

No	Graduate Competency Standards	Average correct answers	Percentage (%)
1	Understanding the nature of biology as a science and describing the problem object of biology through scientific methods	21	61.76
2	Explaining the characteristics and classification of living things, the role of biodiversity for life and its preservation	23.42	69.88
3	Discuss and analyze connection of the ecosystem component, transform of material and energy and also the human role in ecosystem balance.	27.66	81.37
4	Explaining the structure and function of cells and associating them with the structure and function of tissues.	24.66	72.54
5	Explaining the structure and function of the human organ system as well as disorders/diseases that may occur in these organs	21.50	63.23
6	Explaining the factors that affect the growth and development that occurs in plants through trial results	26	76.47
7	Describing the process of metabolizing carbohydrates and chemosynthesis	17.80	52.35
8	Understanding the basic concepts of heredity, reproductive cells, the application of the principles of heredity and mutation events	19.71	57.98
9	Explaining the theory of evolution and implications for the development of science	20.50	60.29
10	Explaining the principles and applications of biotechnology	24.66	72.54

When viewed from the ability to solve problems based on Graduate Competency Standar seventh which discusses the process of metabolizing carbohydrates and chemosynthesis obtained average percentage of 52.35% and Graduate Competency Standar eight (SKL 8) which discusses the basic concepts of heredity, reproductive cells, the application of the principles of heredity and mutation events obtained average of 57.98%. The highest percentage (81.37%) is in Graduate Competency Standar third (SKL 3) which discusses analyzing the relationship between the components of ecosystem, changes of matter and energy and the human role in the balance of ecosystem.

Biology has special characteristics, which differ from other sciences in terms of objects, problems, and methods. Biology in high school subjects is developed through analytical thinking skills, inductive and deductive to resolve issues related to the events of surrounding nature. Qualitative and quantitative problem solving is done using an understanding in the fields of mathematics, physics, chemistry and other supporting knowledge (Anonymous, 2003).

The material metabolism became the basis for studying other materials such as in plant physiology, animal physiology, biotechnology or other allied materials. It is due to the immateriality of topics they are studying. Therefore, this topic is difficult to understand because it cannot be seen (Rahmatan, et al 2012).

Material metabolism includes metabolism of carbohydrates, lipids, amino acids and nucleotides. These processes are very complex and interconnected to one another. In addition, these processes also involve various enzymes. Material about metabolism is the biological material related to the chemical reactions that cannot be observed in plain view. Therefore we need a method to be able to visualize chemical reactions so that they can be observed in real. The terms used in the processes of chemical reactions are relatively difficult to remember.

Ecological materials cannot be separated from the discussion of ecosystem with various constituent components, ie abiotic and biotic factors. Abiotic factors include temperature, water, humidity, light, and topography, while biotic factors are living creatures consisting of humans, animals, plants, and microbes. Ecology is also closely linked to the levels of organization of living things, namely population, community and ecosystem that affect each other and is a system that shows unity. Some materials that are theoretically frequently applied in everyday life make it easier to remember the concept.

4. CONCLUSION

Professional Competence of high school biology teachers in Aceh Tamiang in achieving Graduate Competency Standards (SKL) of biology is excellent (5.88%), good (52.94%) and fair (41.18%). As for SKL mapping obtains the lowest percentage in SKL which discusses the process of metabolizing carbohydrates and chemosynthesis (52.35%) and the highest percentage in SKL 3 that cover topics of analyzing the relationship between the components of ecosystem, changes of matter and energy and the human role in the balance of ecosystem. (81.37%)

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