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The Quality Analysis of Final Examination Test in Biology Education Major

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Abstract. The goal to be achieved in this study is to analyze the quality of the exam questions even semester 2015/2016 school year in Biology Education program. This research uses descriptive method. With the object of research about the exam semester even the academic year 2015/2016 in Biology Education program. Exam analyzed amounted to 14 subjects consisting of 81 questions. The instrument used is the documentation of the exam of the semester of the academic year 2015/2016. The data obtained were analyzed by descriptive analysis including data reduction, systematic data presentation, and conclusion drawing. The result of the research shows that the quality of the final exam of the semester of the academic year 2015/2016 in the Biology Education study program is obtained by the low level knowledge aspect of 81.48%, and the high knowledge aspect of 18.52%.

Keywords: Quality; Semester Final Exam

I. INTRODUCTION

Referring to self-evaluation guidelines for accreditation of study programs and higher education institutions (BAN-PT, 2008) states that the learning system is organized based on planning relevant to the learning, learning and hierarchy objectives. Planning is meant, one of them in planning the assessment. In assessing the student, the lecturer should do so precisely and objectively. One of the main tasks of lecturers is to conduct assessment (assessment) on the students. In the implementation of learning required mechanisms to monitor, review and improve periodically lecture activities, such as; the presence of students, the presence of lecturers, preparing the RPS, RPM and lecture materials, and prepare assessment of learning outcomes.

Assessment of learning outcomes is one of the lecture activities used to measure the success of students in studying certain subjects. Thus the assessment of these learning outcomes can be used to determine the progress of students in achieving the desired competence. So it can be said that the assessment of these learning outcomes is one of the determinants of student success.

In the assessment of the accreditation of the study program there is an assessment of the exam questions made by the lecturers of study program that is in Standard 5.3.2, so that the study program needs to evaluate the type of assessment made, and aspects of the measured achievement of each question made. To see the assessment of the learning outcomes of a course, can not be separated from the learning carried out such as using various strategies and techniques that challenge, encourage students to think critically, explore, experiment, and be creative by utilizing various sources. Of course from this learning process required measuring instruments (exam questions) is good and appropriate, so the test questions given in accordance with what to be measured.

To measure the mastery of students in certain subjects, generally still use the exam questions in the realm of cognitive. Therefore it needs to be analyzed as to what is the exam of the semester of the academic year 2015/2016 in Biology Education course.

Based on the results of the documentation of one of the 2015 exam questions on the subject of Environmental Knowledge written matter as follows: "Garbage derived from organic waste in the form of leaves, paper, vegetable remnants, manure and manure waste can still be processed so that the economic value. Mention the form of waste treatment that can be done, and explain the stages of manufacture in brief! ". When viewed from the aspects measured by Bloom's revised taxonomic knowledge domain, test questions are made measuring on aspects of knowledge-understanding skills (C-2). This shows still not yet measured the aspect of high level knowledge (analyze, evaluate, and create).

From the sample test questions presented, the question still measures low-level thinking skills. This is in line with Bloom's opinion that the knowledge and understanding aspects are classified as low-level thinking

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skills, while analysis, synthesis, and evaluation are classified as high-level thinking skills (Zohar, 2004; Teare, 2005).

Anderson and Krathwohl (2010) state that: "the dimensions of cognitive processes include: remembering, understanding, applying, analyzing, evaluating, and creating." Remembering is taking knowledge from long-term memory. Understanding is constructing the meaning of the subject matter, including what is said, written and drawn by the teacher. Apply is to apply or use a procedure under certain circumstances. Analyzing is to break the material into its constituent parts and determine the relationship between the part and the ridge between that part and the overall structure or purpose. Evaluating is making decisions based on criteria and / or standards. Creating is to integrate parts to form something new or to create an original product.

In the dimension of knowledge there are four types of knowledge categories, namely: factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge (Anderson and Krathwohl, 2010). Based on the competencies presented in the syllabus of each course, should pay attention to aspects of the cognitive process dimension and the dimension of knowledge dimension measured from simple to complex knowledge. Similarly, the attainment of aspects of cognitive knowledge processes, ranging from low-level knowledge (knowledge recall) to high-level knowledge (knowledge of creation / reasoning). Lecturers must be able to menjabarkarnya in the items that describe the achievement of these competencies.

From what has been presented in the background, it is necessary to do further research on quality analysts about the exam of the semester of the academic year 2015/2016 in Biology Education course which includes; exposure on the completeness of identity on the final exam of the semester is made, the analysis on the dimensions of knowledge and aspects of cognitive processes that include aspects of knowledge low level, and high level knowledge.

II. RESEARCH METHOD

The research method used is descriptive research method (Sugiyono, 2008). The activities that will be conducted are: (1) to determine the subject of research by purposive sampling technique, (2) to give research instrument on research subject, (3) to collect research data, (4) to analyze data of research result, (5) to conclude research result , and (6) make a research report.

Subjects in this study are lecturers who teach the semester of the academic year 2015/2016 in Biology Education course. As for the object of research is the exam of the semester of the academic year 2015/2016 in Biology Education course. Exam analyzed as many as 15 subjects.

The research instruments used as data gathering tools are: questionnaires, spreadsheets and documentation. Each data collection tool must have validity and reliability (reliabel) in order to be used as a good data gathering tool (Djaali, 2008). Questionnaire made will be tested validity and reliability by using valiidity content through expert judgment.

The contents of the questionnaire are a grid of exam questions containing aspects of knowledge dimensions and aspects of the knowledge process (cognitive) dimension. This field is used to collect data directly from the lecturer who made the question. While the documentation in the form of exam questions made by the lecturer, analyzed based on; completeness of identity, achievement of knowledge dimension aspects, and aspects of knowledge process (cognitive) which aims to obtain data about the final exam of the semester. The matter of this exam is as the document data used to analyze the assessment aspect, measured and grouped on low level knowledge criteria or high level knowledge.

The type of data obtained in this study is qualitative data. Qualitative data are analyzed and interpreted in accordance with the needs of the study. The data obtained were analyzed by descriptive analysis including stages: data reduction, systematic data presentation, and conclusion (Sugiyono, 2008).

III. RESULT AND DISCUSSION

Research Result

Based on the purpose of this study is to analyze more in depth about the quality of exam questions even semester 2015/2016 school year in Biology Education study program in terms of skill level of thinking level of knowledge, it will be described the following analysis results; exposure to the completeness of the identity of the exam each subject that is analyzed, exposure aspects of thinking skills level of knowledge based on the analysis of questions from each course.

The following presents the presentation of the completeness of the identity of the exam of the semester course of the Phase Teaching of 2015/2016 based on the analysis of documentation data. Exam analyzed by 14 subjects is obtained in Table 1.

Table 1
Completeness of Identity of Final Test of Semester Even Years of the Final Year 2015/2016 on Biology Education Studies Program

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No.	Courses	Date	Time	Lecturer	Information
1	Dasar-Dasar Sains	available	available	available	complete
2	Ilmu Alamiah Dasar	not available	not available	not available	not complete
3	Pengetahuan Lingkungan	available	available	available	complete
4	Enviromental Science	available	available	available	not complete
5	Strategi Belajar Mengajar (1)	available	available	available	complete
6	Strategi Belajar Mengajar (2)	available	not available	available	not complete
7	Teaching and Learning Strategy	available	not available	available	not complete
8	Belajar Pembelajaran	available	available	available	complete
9	Mikrobiologi	available	available	available	complete
10	Taksonomi Tumbuhan	available	available	not available	not complete
11	Taksonomi Hewan	not available	not available	available	not complete
12	English for Biology	available	available	available	not complete
13	Teknik Laboratorium	not available	available	available	not complete
14	Embriologi	not available	available	available	not complete
Number of problem devices that have complete identity = 5 (35,71%)					
Number of problem devices that have an incomplete identity = 9 (64,29%)					

Based on Table 1, there are data about the presentation of the final exam of the second semester of Teachers Year 2016/2016 Number of end test items of the even semester with full identity of 35.71% and incomplete amounted to 64.29%.

By using the instrument sheets obtained data about the quality of the final exam questions even semester doctrine 2015/2016 on biology education study program includes analysis of aspects of knowledge dimensions and aspects of the dimensions of cognitive processes. Table 2 shows the quality analysis of the final test of the even semester based on the measured knowledge dimension, while in Table 3 it is presented about the quality analysis of the final exam of the even semester based on the measured cognitive process dimension.

Table 2
Results of Quality Analysis of Final Test of Semester Even Semester of the Doctrinal Year 2015/2016 based on the Knowledge Dimension

No.	Courses	Dimension of Knowledge			
		Factual	Conceptual	Procedural	Meta-Cognitive
1	Dasar-Dasar Sains		4		
2	Ilmu Alamiah Dasar	1	6	1	
3	Pengetahuan Lingkungan		4		
4	Enviromental Science		5		
5	Strategi Belajar Mengajar (1)		5	2	
6	Strategi Belajar Mengajar (2)		5	1	
7	Teaching and Learning Strategy		4	1	
8	Belajar Pembelajaran	1	5		
9	Mikrobiologi	1	4		1
10	Taksonomi Tumbuhan	1	2	1	
11	Taksonomi Hewan	3	2		
12	English for Biology		11		
13	Teknik Laboratorium		1		
14	Embriologi	4	4	1	
Number of questions		11	62	7	1
Percentage (%)		13,58	76,54	8,64	1,24

Based on the dimensions of knowledge Table 2 of 81 problems (14 subjects) analyzed were obtained: 13.58% including facts, including 76.54 concepts, 8.64 including procedures, and 1.24% including metacognitive. The final exam of the semester of the academic year 2015/2016 made by the lecturer of the biology education course reviewed from the aspects measured in the dimensions of knowledge of the majority students still on the concept of knowledge, but still very little that presents the knowledge of meta-cognitive procedures and knowledge.

Table 3
Results of Quality Analysis of Final Test of Semester Even Semester Year 2015/2016 based on Cognitive Process Dimensions

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No.	Mata Kuliah	Dimensi Proses Kognitif					
		Remember	Understand	Apply	Analyze	Evaluate	Create
1	Dasar-Dasar Sains	1	2	1			
2	Ilmu Alamiah Dasar		7	1			
3	Pengetahuan Lingkungan	1	2		1		
4	Enviromental Science	1	1	3			
5	Strategi Belajar Mengajar (1)		2	1	1	2	1
6	Strategi Belajar Mengajar (2)		1	4	1		
7	Teaching and Learning Strategy		1	3	1		
8	Belajar Pembelajaran	1	2	1	1	1	
9	Mikrobiologi		3	1	2		
10	Taksonomi Tumbuhan		1	1	2		
11	Taksonomi Hewan	2	3				
12	English for Biology		5	5	1		
13	Teknik Laboratorium		1				
14	Embriologi	3	5		1		
	Number of Questions	9	36	21	11	3	1
	Percentage (%)	11,11	44,44	25,93	13,58	3,70	1,24

For the final semester exam in the Biology Education study program that measures the aspects of cognitive knowledge dimension, it can be seen in Table 3 the results are consecutively ranging from the aspects of remembering, understanding, applying, analyzing, appraising, and creating are as follows: 11.11% 44.44%, 25.93%, 13.58%, 3.70%, and 1.24% respectively. Based on the results in Table 3 it can be identified that aspects of cognitive processes (knowledge) of low level and high level knowledge as in Table 4.

Table 4
Results of Quality Analysis of Final Test of Semester Even Semester Year 2015/2016 viewed from the Aspects of Low and High Level Knowledge

No.	Level Aspects of Knowledge	Knowledge Process Dimension	Number of Problems Based (%)	
			Knowledge Dimension	Knowledge level
1	Low Level	Remembering	11,11	81,48
		Understanding	44,44	
		Applying	25,93	
2	High Level	Analyzing	13,58	18,52
		Evaluating	3,70	
		Creating	1,24	

Analysis of the quality of the final exam of the semester of the academic year 2015/2016 viewed from the level of measured aspects of knowledge obtained results: on the low level of knowledge knowledge of 81.48%, and knowledge aspects of high level of 18.52%.

Discussion

Based on the purpose of this study is to analyze more in depth about the quality of the exam questions even semester 2015/2016 academic education program in terms of the level of thinking skills level of knowledge, obtained the analysis of the exposure of the completeness of identity on the exam each subject that analyzed, exposure aspects of the level of knowledge based on the problem analysis of each course.

Based on the research results obtained data on how to present the final exam of the semester of the academic year 2015/2016, from 14 subjects analyzed there are 35.71% presentation of the final exam of the semester of the academic year 2015/2016 exam even semester which has full identity, and 64.29% incomplete. Thus there is no accuracy about the importance of identity written in the final exam of the semester by pengampu course. Though identity is a feature or identifier of an object. The intended object is a matter of examination that will be done by the students. Given the complete identity of the exam questions will provide guidance for those reading the questions, such as days and dates, how long it will take to do the exam, and who is the professor.

By using questionnaires and spreadsheets about the dimensions of knowledge and knowledge process dimensions obtained quality analysis of the final exam of the semester even the knowledge of 2015/2016 in the biology education program. From the result of the quality analysis of the final exam of the even semester based on the dimensions of the measured knowledge obtained 81 questions from the total 14 subjects analyzed there are 13.58% including facts, including 76.54 concepts, 8.64 including procedures, and 1.23% metacognitive. The results show that most of the final exam questions are still on the concept of knowledge. While the aspects of knowledge about facts, procedural and metacognitive is still very small. This is in accordance with the opinion of Rasydin (2009) which states that aspects of the measured knowledge must be in accordance with the objectives.

For the matter of measuring the dimensions of the knowledge process (cognitive), the results obtained from the aspects of remembering, understanding, applying, analyzing, assessing and creating are 11.11%, 44.44%, 25.93%, 13.58% , 3.70%, and 1.23%. About final exam of the semester of the academic year 2015/2016 in Biology Education study program obtained the highest percentage on the aspect of understanding, while the lowest on the aspect of creating or reasoning. This is in line with Subroto (1997), an assessor (teacher / lecturer) must have the ability to evaluate.

Viewed from the group of subjects in the field of education (MKB) and the field of expertise (MKK) there are results that show that: in the group of subjects of education (MKB) consecutively start aspects of remembering, understanding, applying, analyzing, assessing and creating is 7, 14%, 28.57%, 35.72%, 14, 29%, 10.71%, and 3.57% respectively, while for expertise courses (MKK) were 13.21%, 52.83%, 20, 76%, 13.21%. To assess and create, in the group of expertise courses have not made a problem. Differences in the number of questions tested between the two groups of subjects MKB and MKK obtained as Figure 1.

Figure 1. Final Year Test Analysis Even Semester Year of the Doctrine 2015/2016 viewed from the Course Group

Analysis of the quality of the final exam of the semester of the academic year 2015/2016 viewed from the level of measured aspects of knowledge obtained results: on the low level of knowledge knowledge of 81.48%, and knowledge aspects of high level of 18.52%. This suggests that very few questions have been made to measure aspects of high-level knowledge. This is consistent with the results of research which states that knowledge and understanding aspects are classified as low-level thinking skills, while analysis, synthesis, and evaluation are classified as high-level thinking skills (Zohar, 2004; Teare, 2005).

IV. CONCLUSIONS

The results showed that the presentation of the final exam of the semester of the academic year 2016/2016 at Biology Education program that has a complete identity of 35.71% and incomplete amounted to 64.29%. Judging from the aspect of knowledge dimension, of 81 problems analyzed or 14 courses, there are 13.58% including facts, including 76.54 concepts, 8.64 including procedures, and 1.23% including meta-cognitive. For questions that measure the dimensions of cognitive knowledge, it is obtained from the aspects of remembering, understanding, applying, analyzing, valuing and creating as follows: 11.11%, 44.44%, 25.93%, 13.58% 3.70%, and 1.23%.

The quality of final examination of semester 2015/2016 in Biology Education study program from the level of knowledge aspect measured obtained low level knowledge aspect equal to 81,48%, and high knowledge aspect equal to 18,52%.

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