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ANALYSIS COGNITIVE DOMAIN INSTRUMENTS OF EVALUATION IN SMA BANDUNG

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ABSTRACT

The level of competence achievement will be known by evaluating the students after all the basic competencies that exist in the standard of the content they are studying, which must be seen how the suitability of the evaluation instruments provided to the students with the demands of basic competencies and the process of learning in the class. The method used in this researchis a descriptive method. Subjects were ten biology teachers from seven SMANs in Bandung as a sample, each school representing three clusters. Selection of this research sample is done by using stratified sampling technique, that is by choosing school with high category, medium and low. KD analyzed material of Class X Plantae and Class X Excression System. Plantae material learning process question and excretion system on cluster 1, the highest average at level C2 (understanding) that is equal to 55,91%. While on cluster 2 the highest average also at level C2 (understanding) that is equal to 50,96%. While on the cluster 3 the highest average is also at level C2 (understand) that is equal to 48,91%. The cognitive domain of Plantae's exercise / material tasks in cluster 1, the highest average at the level C1 (knowledge) is 57.5%. While on the cluster 2 the highest average also at level C1 (knowledge) that is equal to 71,67%. While the highest average cluster is at level C2 (understanding) that is equal to 51,67%. The cognitive domain of Plantae material repetition and Excretion System in cluster 1, the highest average at the level of C1 (knowledge) is 56.67%. While on the cluster 2 average highest at level C1 (knowledge) that is equal to 56,3%. While on the cluster 3 highest cognitive domain is at level C1 (knowledge) that is equal to 52,55%.

Keywords: Basic Competencies, Evaluation Instruments, Learning Outcomes

PRELIMINARY

In generally, evaluation has two main functions, namely to know the achievement of student learning outcomes and teacher teaching outcomes. Knowledge of student learning outcomes is related to the extent to which students have achieved the learning objectives or established

competencies. Meanwhile, teacher teaching outcomes are related to the extent to which teachers as student learning managers, in terms of planning, managing, leading, and evaluating.

The main purpose of the assessment by Clarke (1996) is to model effective learning, to enhance student development, and to inform the action required in the lesson. The success of the learning process is inseparable from the assessment role. Through teacher assessment guided to determine the method or approach that must be done for effective learning and has added value for the students. The process of obtaining effective learning will be found through the observation and reflection from the activities undertaken. All information obtained from various sources and through various assessment techniques is used as a reference to determine the type and form of learning action.

Assessment should be done by each teacher to measure the ability of the students, Uno (2012) explains the function of educational assessment for teachers is (1) knowing the learning progress of learners, (2) knowing the position of each individual learners in his group, (3) knowing weaknesses of teaching and learning in PBM, (4) fixing the teaching and learning process and (5) determining students' graduation.

Meanwhile, the national examination as a means of evaluation of the competency standards of graduates as well as the quality control of national education conducted on the students is based on the achievement of basic competencies that exist in the standard contents in each field of science. The description suggests that SK or KD is still to be the benchmark for measuring student success in School. This means that the evaluation of student learning outcomes should be developed based on in accordance with the learning and demands of SK or KD.

The results of research conducted by Rahmat et al (2008) is showed that there are some concepts in biology learning is considered difficult by high school students in west java including Bandung and the concept includes Plantae and Excretion System. Rahmat et al, (2010), explains that the concept of learning is a priority of the needs of teachers to improve the quality of the profession. The result of research is appropriate with the Mapping and Development of Education Quality (PPMP) conducted by the Directorate General of Higher Education Kemendiknas in 2011, which shows that the concept is considered difficult by students and teachers is always a problem.

The material of clas X about Plantae contained in KD 3.3 (Describing the characteristics of Divisio in the World of Plant and its role for the survival of the earth) and the material of about Excretion System contained in KD 3.5 (explaining the linkage between structures, functions and processes and abnormalities / diseases that can occur in human and animal excretion systems, such as fish and insects) are some of the material deemed difficult by students and have considerable material coverage.

The level of competence achievement will be known by evaluating students after all the basic competencies in the content they are studying, which should be seen how the suitability of the evaluation instruments is given to the students with the demands of basic competencies and the learning process in the classroom.

METHODOLOGY

The method used in this research is descriptive method. Subjects were ten biology teachers from seven SMA N in Bandung, each school representing three clusters. Selection of this research sample is done by using stratified sampling technique, that is by choosing school with high category, medium and low. The data were obtained by observation, documentation study and questionnaire.

RESEARCH RESULT

This research also looks at the cognitive domain of learning process questions, exercises / questions and repetition questions in measuring students' abilities on Plantae and excreation System that have been presented in the learning process, seen from the percentage of level usage of each cognitive domain. This data is presented according to cluster of SMA Negeri Kota Bandung, complete data shown in Tables 1, 2 and 3.

a. Learning Process Questions

Tabel 1. Percentage of Cognitive Domain Question of Learning Process on Plantae Material and Excretion System Based on School Cluster

No	**JenjangKognitif**	***Cluster* 1**			***Cluster* 2**			***Cluster* 3**		
		Plantae (%)	S.Ekskresi (%)	Rata-rata(%)	Plantae (%)	S.Ekskresi (%)	Rata-rata(%)	Plantae (%)	S.Ekskresi (%)	Rata-rata(%)
1	C1	49,78	30,16	39,97	55	30,16	42,58	53,26	36,55	44,91
2	C2	41,97	69,84	55,91	34,84	67,07	50,96	39,13	58,69	48,91
3	C3	8,26	-	4,13	10,17	-	5,1	4,35	4,76	4,56
4	C4	-	-	-	-	2,78	1,39	-	-	-

Based on the acquisition percentage of the cognitive domain in the learning process question of each cluster varies. On cluster 1 the highest percentage of cognitive domain is at level C2 (comprehension) that is equal to 69,84% in excretory system material, and the lowest at level of C3 (application) that is equal to 8,26% in Plantae material. This shows the cognitive domain of C2 (understanding) on the question of Plantae material learning process and the more excretion system that teachers use in measuring students' ability with the average percentage of 55.91%.

While the cognitive domain of the cluster 2 percentage of the highest level of cognition is at the level of C2 (understanding) that is equal to

67.07% in the excretory system material. While the lowest at the level of C4 (analysis) that is equal to 2.78% on the excretory system material. This data shows the cognitive domain of learning process question on cluster 2 the highest percentage average is in the cognitive domain of C2 (understanding) that is equal to 50,96%.

When considered the cognitive domain of cluster 3, the highest percentage in the cognitive domain of C2 (understanding) that is equal to 58.69% in the excretory system material.

The lowest percentage in C3 (application) is 4.35% in Plantae material. It also shows on cluster 3 that the learning process only uses the cognitive domain up to C3 (application), but the highest average percentage is in C2 (cognitive) cognitive domain (48.91%).

a. Exercises / Tasks

Table2. Percentage of Cognitive Domain of Exercise / Duty on Plantae Material and Excretion System Based on School Cluster

No	**Jenjang Kognitif**	***Cluster* 1**			***Cluster* 2**			***Cluster* 3**		
		Plantae (%)	S.Ekskresi (%)	Rata-rata(%)	Plantae (%)	S.Ekskresi (%)	Rata-rata(%)	Plantae (%)	S.Ekskresi (%)	Rata-rata(%)
1	C1	75	40	57,5	55,84	71,67	63,76	66,67	30	48,34
2	C2	20	60	40	41,04	28,34	34,69	33,34	70	51,67
3	C3	5	-	2,5	3,13	-	1,57	-	-	-

Based on the acquisition of percentage of cognitive domain in practice problem / task of each cluster varies. In cluster 1 the highest percentage of cognitive domain is found at level C1 (knowledge) that is 75% in Plantae material, and the lowest at C3 level (application) is 5% in Plantae material. This shows the cognitive domain of C1 (knowledge) on the Plantae material and the Excretion System more used by teachers in measuring the students' ability with the average percentage of 57.5%.

While the cognitive domain in the cluster 2 percentage of the highest level of cognition is at the level of C1 (knowledge) that is equal to 71.67% in the excretory system material. While the lowest at the level of C3 (application) that is equal to 3.13% in Plantae material. This data shows the cognitive domain of practice / task in cluster 2 the highest percentage average is in the cognitive domain of C1 (knowledge) that is equal to 63,76%.

When considered the cognitive domain of cluster 3, the highest percentage in the cognitive

domain of C (understanding) is 70% in the excretory system material. The lowest percentage of C1 (knowledge) is 30% in the excretion system material. It also shows that in cluster 3 the exercises only use the cognitive domain up to C2 (understanding), the highest average percentage is in the cognitive domain of C2 (understanding) that is equal to 51,67%.

b. Test Question

Tabel 3. Percentage of Cognitive Domain of Matter on Plantae Materials and Excretion Systems Based on School Cluster

No	**JenjangKognitif**	***Cluster* 1**			***Cluster* 2**			***Cluster* 3**		
		Plantae (%)	S.Ekskresi (%)	Rata-rata(%)	Plantae (%)	S.Ekskresi (%)	Rata-rata(%)	Plantae (%)	S.Ekskresi (%)	Rata-rata(%)
1	C1	42,19	30,84	36,52	48,04	64,55	56,3	51,67	53,43	52,55
2	C2	51,25	56,67	53,96	32,75	35,45	34,1	41,19	43,47	42,33
3	C3	6,58	10	8,29	13,33	-	6,67	7,15	3,1	5,13
4	C4	-	2,5	1,25	5,88	-	2,94	-	-	-

Based on the acquisition of percentage of cognitive domain on repetition as well as questions of learning process and practice questions / tasks of each cluster varies. In cluster 1 the highest percentage of cognitive domain is at level C2 (understanding) that is equal to 56,67% in excretory system material, and the lowest at level of C3 (application) that is equal to 6,58% in Plantae material. This shows C2 (understanding) in the test question cognitive aspects of Plantae material repetition and more excretion system that teachers use to measure students' ability with average percentage of 53.96%.

While the cognitive domain in cluster 2 percentage of the highest level of cognition is found at level C1 (knowledge) that is equal to 64,55% in the material of Excretion System. While the lowest at the level of C4 (analysis) that is equal to 5.88% in Plantae material. This data shows the cognitive domain of repetition in cluster 2 the highest average percentage is in the cognitive domain of C1 (knowledge) that is equal to 56.3%.

When considered cognitive domain on cluster 3, as well as cluster 2, the highest percentage in the cognitive domain of C1 (knowledge) is equal to 53.43% in the excretion system material. The lowest percentage in C3 (application) is 3.1% in the excretory system material. It also shows that cluster 3 repetition only uses the cognitive domain up to C3 (application), but the highest average percentage is in the cognitive domain of C1 (knowledge) that is 52.55%.

The cognitive domain of learning process questions, practice questions / tasks and repetition questions that teachers use refers to the basic competencies and indicators that have been prepared in the RPP. The formulation of indicators can be developed into several assessment indicators covering the cognitive domain. Basic competence as a

reference is KD 3.3 (Describes the characteristics of Divisio in the Plant World and its role for survival on earth) and KD 3.5 (Describes the linkages between structures, functions and processes and disorders / diseases that can occur in excretory systems in humans and animals, for example in fish and insects). KD 3.3 and KD 3.5 require the cognitive domain of C2 (understanding) to C4 (analysis). Most teachers on learning process questions, practice questions / tasks and repetition questions use at level C2 (understanding). That is, the cognitive domain of the learning process question, the practice / task and repetition questions are in accordance with the demands of KD (Table 1, Table 2 and Table 3)

DISCUSSION

1. The Cognitive Commodities of Evaluation Instruments

This research looks at the cognitive aspects of evaluation instruments in the learning process questions, practice questions / tasks and test questions that teachers use to see how far students perceive the material that has been delivered in the learning process. Daryanto (2012), states that in relation to the unit of learning, the cognitive domain plays the most important role that the goal of teaching. The cognitive domain of learning process questions, practice questions and assignments of each school are different, the percentage of usage of each level is also different (Table 1, Table 2 and Table 3).

The cognitive domain of learning process questions, practice questions / tasks and test questions that teachers use refers to the basic competencies and indicators that have been prepared in the RPP. However, there are still many cognitive domains in the learning process questions, exercises / tasks and repetition questions that have not been covered in basic competencies. This is in line with Akbar's (2012) opinion that competence as a goal in a complex curriculum means that curriculum based on competence aims to develop knowledge, understanding skills, values, attitudes and interests of students so that they can do something in the form of proficiency with responsibility. Therefore the goal to be achieved in this competence is not just an understanding of the subject matterial, but how the understanding and mastery of the material can affect the way of acting and behaving in daily life. Indicators are markers of KD achievement characterized by measurable behavioral changes that include attitudes, knowledge, and skills. Indicators are developed based on the characteristics of learners, subjects, educational units, regional potentials and formulated in operational verbs that are measurable and / or observable. The formulation of indicators can be developed into several assessment indicators that include the cognitive, affective, and / or psychomotor aspects.

The question of Plantae material learning process and excretion system on cluster 1, using the level of cognitive domain up to C3 (application), but on average at the level of C1 (knowledge) and C2 (understanding), the highest

average at level C2 (understanding) amounted to 55.91%. While on cluster 2 using cognitive sphere to level C4 (analysis), but the highest average also at level C2 (comprehension) that is equal to 50,96%. While on cluster 3 of cognitive domain that used to level C3 (application), highest average also at level C2 (comprehension) that is equal to 48,91%. All mean clusters use C1 (Cognitive) and C2 (understanding) cognitive level (Table 1).

The cognitive domain of Plantae's Exercise and Excretion System on cluster 1, using levels up to C3 (application), but the same as the average learning process question is at the level of C1 (knowledge) and C2 (understanding), the highest average at the level of C1 (knowledge) that is equal to 57.5%. While on cluster 2 using cognitive domain also up to level C3 (application), highest average also at level of C1 (knowledge) that is equal to 71,67%. While on cluster 3 of cognitive domain which is used until C3 level (application), highest average is at level C2 (comprehension) that is equal to 51,67%. All of the average clusters use cognitive domain level C1 (knowledge) and C2 (comprehension). On practice matter / task only use up to C3 level (application), (Table 2).

The cognitive domain of Plantae material repetition and Excretion Systems on cluster 1, using levels up to C4 (analysis), but the same as the learning process questions and the average practice questions / tasks are at the level of C1 (knowledge) and C2 (understanding). The highest average at the level of C1 (knowledge) that is equal to 56.67%. While on cluster 2 using the cognitive domain up to C4 level (analysis), the highest average at the level of C1 (knowledge) that is equal to 56.3%. While on cluster 3 of cognitive domain that used to level C3 (application), highest average is at level of C1 (knowledge) that is equal to 52,55%. All of the average clusters use cognitive domain level C1 (knowledge) and C2 (understanding), (Table 3).

As an educator, the teacher needs to understand the various taxonomy goals to gain broader insights about the learning objectives, and to choose which ones fit the cared subjects and the learning activities they designed. Teachers must also understand the levels contained in the cognitive domain. This statement is in line with Arikunto (2013), that on the basis of this principle the taxonomy is organized into a level that indicates the degree of difficulty. For example, considering facts is easier than take conclusions or memorizing, it's easier than giving a judgment. This level of difficulty also reflects on the difficulty in learning and teaching.

According to the law of teachers and lecturers No.14 year 2005 article 1 paragraph 1 stated that "Teachers are professional educators with the main task of educating, teaching, guiding, directing, training, assessing and evaluating learners in early childhood education formal education path, basic education and secondary education ". Efforts pofesionalisme the position of teachers is closely related to efforts to improve the quality of learning result study of students, it means that the increase in student learning outcomes is

determined by the quality of learning and the quality of teachers or professionalism of teachers. This is in line with the opinion of Rohman (2011) states that the teacher is essentially a profession which in his work requires a special skill in their field, has a moral commitment and responsibility in delivering learners to a more mature and useful life for all, , sincerity of caring for the profession it carries.

The calculation of the percentage of suitability of each cluster, related to the cognitive domain of the learning process question, the test practice / task and test questions, reaches a different percentage in each aspect. The average uses the cognitive domain with the level of C1 (knowledge) and C2 (understanding). All clusters use cognitive domain levels up to C4 (analysis). In the question of learning process of cognitive domain used up to C4 (analysis), while in practice matter / task of cognitive domain used only until C3 (application), whereas in test question using cognitive domain until C4 (analysis).

The cognitive domain of learning process questions, practice questions / tasks and test questions that teachers use refers to the basic competencies and indicators that have been prepared in the RPP. The formulation of indicators can be developed into several assessment indicators covering the cognitive domain. Basic competence as a reference is KD 3.3 (Describes the characteristics of Divisio in the Plant World and its role for survival on earth) and KD 3.5 (Describes the linkages between structures, functions and processes and disorders / diseases that can occur in excretory systems in humans and animals, for example in fish and insects). KD 3.3 and KD 3.5 require the cognitive domain of C2 (understanding) to C4 (analysis). Most teachers on learning process questions, practice questions / tasks and repetition questions use at level C2 (understanding). That is, the cognitive domain of the learning process question, the practice / task and repetition questions are in accordance with the demands of KD, both on Plantae material and Excretion System (Table 1, Table 2 and Table 3).

CONCLUSION

Plantae material learning process question and excretion system on cluster 1, the highest average at level C2 (understanding) that is equal to 55,91%. While on cluster 2 the highest average also at level C2 (understanding) that is equal to 50,96%. While on cluster 3 the highest average is also at level C2 (understanding) that is equal to 48,91%. The cognitive domain of Plantae's exercise / material tasks on cluster 1, the highest average at the level of C1 (knowledge) is 57.5%. While on cluster 2 the highest average also at level C1 (knowledge) that is equal to 71,67%. While the highest average cluster is at level C2 (understanding) that is equal to 51,67%. The cognitive domain of Plantae material repetition and Excretion System in cluster 1, the highest average at the level of C1 (knowledge) is 56.67%. While on cluster 2 average

highest at level C1 (knowledge) that is equal to 56,3%. While in cluster 3 highest cognitive domain is at level C1 (knowledge) that is equal to 52,55%.

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