Biology Procedural Knowledge at Eleventh Grade of Senior High School in West Lampung Based on Curriculum

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Abstract
This study was aim to determine Biology procedural knowledge of senior high school in West Lampung based on curriculum at 11th grade in even semester. This research was descriptive research. The population was all students of senior high school in West Lampung. The sampling technique in this research used purposive sampling technique, so the researcher obtained 3 schools using K13 and 3 schools using KTSP. Data collecting technique used instrument test. Data analysis technique used U-Mann Whitney test. The result showed that p=0.028 (p<0.05), so there was significant differences between school using K13 and KTSP. The procedural knowledge of schools which using K13 is higher than school which using KTSP, with the mean score K13=4.35 and KTSP=4.00

1. Introduction
Education Unit Level Curriculum (KTSP) and 2013 Curriculum which emphasizes the development of students’ thinking skills, as one aspect of competence, have been used for several years in schools, including biology subject in high school. Standards the education assessment includes 3 domains: Affective domain, Cognitive domain, and Psychomotor domain. In the cognitive domain has the ability of processes and products. In the cognitive product dimension (knowledge) consists of (1) factual knowledge, (2) conceptual knowledge, (3) procedural knowledge, (4) and metacognitive knowledge. While the cognitive process dimension includes six process categories (C1-C6) that is (1) remembering (2) understanding (3) applying (4) analyzing (5) evaluating (6) and creating.

Permendikud (The Ministry of Education and Culture) No. 20 2016 concerning Graduates Competency Standards Elementary and High School clearly states the need for high school students is trained in cognitive processes that includes six categories of process (C1-C6) from remembering, understanding, applying, analyzing, and evaluating to achieve mastery of conceptual knowledge (conceptual knowledge), procedural knowledge (knowledge), and metacognitive knowledge (metacognitive knowledge).

The Government through the Ministry of Education and Culture in 2013 began implementing the change of replacement curriculum from the Education Unit Level Curriculum (KTSP) to a new curriculum called 2013 Curriculum. The 2013 curriculum which based on character and competence was born as the answer of various criticisms of the 2006 curriculum. 2013 Curriculum Development is a continuity of steps that include the competence of attitudes, knowledge, and skills in an integrated manner. Biology which related to the nature, the students are emphasized to know about nature, therefore K13 uses a scientific approach.
By the turning of KTSP into the 2013 curriculum the schools are expected there is increasing in the education quality that directly impact on improving learners in Learning process. The curriculum should not be viewed as an activity, but directly focused on the expected learning outcomes (Intended learning outcome). If every turn of the curriculum aims to provide better learning for learners, one of them for the process and cognitive products of students is to be better. However, not all teacher or lecturers are ready to turn of the curriculum, the example of the change of 2013 curriculum there are still schools that use the KTSP curriculum. High school in West Lampung district, not all of them simultaneously using curriculum 2013, there are still some schools that use KTSP curriculum. From 12 high school (SMA) Negeri in West Lampung, only 3 schools are implementing the 2013 curriculum.

2. Material and Method
2.1 Material
2.1.1 Procedural Knowledge
Procedural knowledge is the knowledge of how to do something. Doing this may be doing routine exercises up to solving new problems. Procedural knowledge is a step that must be followed. This knowledge includes the knowledge of skills, algorithms, techniques, and methods, which of all are referred to as procedures. Procedural knowledge also includes the criteria for determining the procedure to be performed (Anderson and Krathwohl, 2001).

| Knowledge Dimension | Cognitive Process Dimension |
|---------------------|-----------------------------|
| Factual             | Remember | Understand | Application | Analysis | Evaluation | Create |
| Conceptual          |           |            |             |          |            |        |
| Procedural          |           |            |             |          |            |        |
| Metacognitive       |           |            |             |          |            |        |

Conceptual knowledge, procedural knowledge, and procedural flexibility were assessed reliably and partly independently of each other. Conceptual knowledge may help with the construction, selection, and appropriate execution of problem solving procedures at the same time, practice using procedure may help students develop and deepen understanding of concepts (Schneider et al, 2011).

2.1.2 Curriculum
The meaning of the curriculum in the juridical-formal perspective, that is (UU) no. 20 of 2003 on National Education System. “The curriculum is a set of plans and arrangements concerning of objectives, content, materials and ways to used as guidelines for the implementation of learning activities to achieve educational goals”. The 2013 curriculum is a refinement of the Education Unit Level Curriculum (KTSP). The objective of the 2013 Curriculum is to prepare Indonesian people to have the ability for live as individuals and citizens who are faithful, productive, creative, innovative, and affective and able to contribute to the life of society, nation, state and civilization of the world.

2.2 Method
This research used descriptive method research. This research was conducted in West Lampung. Data collection was conducted on May 4 to May 23, 2017 in the even semester of academic year 2016/2017. The sampling technique used is purposive sampling. The sample in this research was the
students of XI grade of Senior high school in West Lampung which 3 schools that use K13 and 3 schools still use KTSP. The number of sample is 348 students.

Data was collected through the test technique. The test technique has been done to measure the achievement of procedural capability. The instrument test that was used is multiple choice and essay consisting of immune system material, reproductive system, coordination system, and excretion system. The instrument has been compiled and validated. Analytical techniques was used are inferential analysis in the form of different test to know the difference of students’ procedural knowledge achievement using K13 and KTSP.

3. Result and Discussion
3.1 Result
The results of this research are the result of an instrument in the form of multiple choice and essay of XI grade of senior high school on material which consists of immune system material, reproduction system, coordination system, and excretion system. Based on the result, the researcher obtained p value = 0.028 (p<0.05), so there are significant difference between school using K13 and KTSP. The average value of the procedural knowledge students’ achievement of XI grade of science class in West Lampung which use K13 is 4.35 and school which use KTSP got an average value is 4.00.

The comparison of procedural knowledge value which associated with the curriculum that has been used is shown in Table 2 below.

| Variabel | Statistics (Mean) | Sig (Mann Whitney Test) |
|----------|------------------|------------------------|
| K13      | 4.35             | Significant differences |
| KTSP     | 4.00             | (p = 0.028)            |

3.2 Discusion
Anderson and Kratwohl (2001) divide students cognitive abilities into two, cognitive processes and products. This cognitive process consists of C1-C6 that is to remember, understand, apply, analyze, evaluate, and create, and the cognitive product consists of factual, conceptual and procedural.

There are differences in the school outcomes that use 13 curriculum and KTSP in West Lampung. This can be seen from the value of p = 0.028 (p <0.05) which schools use the 2013 curriculum get a higher average score for about 4.35 while schools that use KTSP is 4.00. The 13 curriculum through the scientific approach is to suppress the students to be able to know the procedures to do scientific things in biology subject. There is a difference between the two curriculums.

This result is supported by the research that has been conducted by Domili (2015) there is a difference in learning outcomes between schools use 13 curriculum obtaining an average (80.04) while schools use KTSP earn an average (77.08). The research that conducted by Tanaya (2017) The quality and quantity of students’ questions at XI grade MIA SMA Negeri 1 Madiun identified that the quality of students’ questions C1 is 40% conceptual dimension, C2 level 10% conceptual dimension, C2 level procedural dimension 30%, level C2 dimension metacognition 20 %.

Engelbrecht et. al (2017) state the balanced view, on the other hand, considers both conceptual and procedural skills as essential in engineering education and job through three strands; in linking its conceptual aspect as a basis on which the conceptual can be built, and in facilitating the progression from the conceptual problem to its procedural solution. There is a complex relationship between conceptual and procedural knowledge in mathematics, dynamic in character. This relates to both, how to understand the constructs and the implications these analytic categories in the organisation of teaching, as well as how engineering students view their relevance for their education.
Procedural knowledge is required in learning biology, as we know biology is closely related to nature and organism, so it is necessary students’ understanding about the way or the procedure, the steps to do something in learning biology.

4. Conclusion

Based on the results of the procedural knowledge achievement on the learning Biology at XI grade for some senior high schools in West Lampung shows that the curriculum was used in the schools affects the students’ procedural knowledge, in K13 get a better value than the school which uses the curriculum 13. The ability of students' procedural knowledge in West Lampung is still low both using K13 and KTSP. It is expected that the teacher and facilitator can improve the quality of education nowadays.

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