Why Bloom's Taxonomy

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Abstracts

A case study of student achievement had been conducted. The study was to explore the student achievement in physics education based on Bloom's Taxonomy. The only domain that was explored was cognitive domain that included C1 up to C6. The subject of physics that was explored was on equations of translational motion. Data was collected by using a standardized test, classroom observation, interview with teacher, and study of teaching plan. The study showed that C1 up to C3 had been in general very well achieved. Meanwhile, the others (C4 up to C6) was poorly achieved. The other two domains namely psychomotor and affective domains are going to be studied.

1. Introduction.

Math and science education at high school in Indonesia has been being severely criticized. The critics is due to low score of the Indonesian national exam. It has been a major concern among science educationists at high school as well as at College of Education (IKIP/FKIP).

We have been trying to improve student achievement by introducing new methods and new approaches for teaching and learning at high school. However, the criteria of student achievement in science education is always based on Bloom's Taxonomy which consists of three domains. The three domains are respectively cognitive, psychomotor, and affective. One of the domains that is being explored is cognitive domain which covers: recall (C1), Comprehension (C2), Application (C3), Analysis (C4), Synthesis (C5), and Evaluation (C6).

2. Methodology.

This study was conducted at third grade of senior high school. It involved 13 teacher and 707 third grade student from thirteen high school. The schools were located at urban (5 schools), suburban (5 schools), and rural areas (3 schools). The five schools located at urban area are SMU-1, SMU-2, SMU-3, SMU-4, and SMU-5. The five school located at suburban area are SMUN-1 Indihiang, SMUN-1 Manonjaya, SMUN-1 Salopa, SMUN Singaparna, and SMU Ciawi. The schools located at rural area are SMUN Taraju, SMUN Karangnunggal, and SMUN Cikatomas.

Data was collected by using a standardized test, classroom observation, interview with teacher, and study of teaching plan. The standardized test was used to measured student achievement, classroom observation was intended to observe teaching learning process based

on each teaching unit plan, interview was conducted to get information about teacher's knowledge about Bloom's taxonomy used in teaching unit plan. Study based on teaching unit plan was performed to gain information on how the cognitive domain was used in designing teaching unit plan. The data collected was then analyzed by using qualitative and quantitative data analyses.

Topic of physics that was used to gain data was about translational motion. This included equations of motion for uniform motion, accelerated motion, uniformly accelerated motion, and for arbitrary motion.

The study was mainly intended to explored cognitive student achievement in physics education. In addition, the study was also intended to evaluate teacher readiness in applying Bloom's taxonomy, especially cognitive domain, in designing and performing teaching-learning process. We wanted to know up to what level of cognitive domain high school student can achieve in learning physics. Besides, we also wanted to know teacher's knowledge about Bloom taxonomy in conjunction with designing teaching unit plan.

3. Finding.

Based on result of data analyses we found that student in general could only get better achievement up to C-3. This can be seen on Figure 1. This means that the student can memorized, comprehend, and apply physical concepts. From Figure 1 we can see that student achievement for C-4 up to C-6 is less than 40 %.

To some extent as we can guess, students who studied at schools located at urban area showed better performance than those who studied at schools located at suburban area. But, those who studied at schools located at rural area showed similar performance as that from those who studied at school located at suburban area. This result is shown in Figure 2.

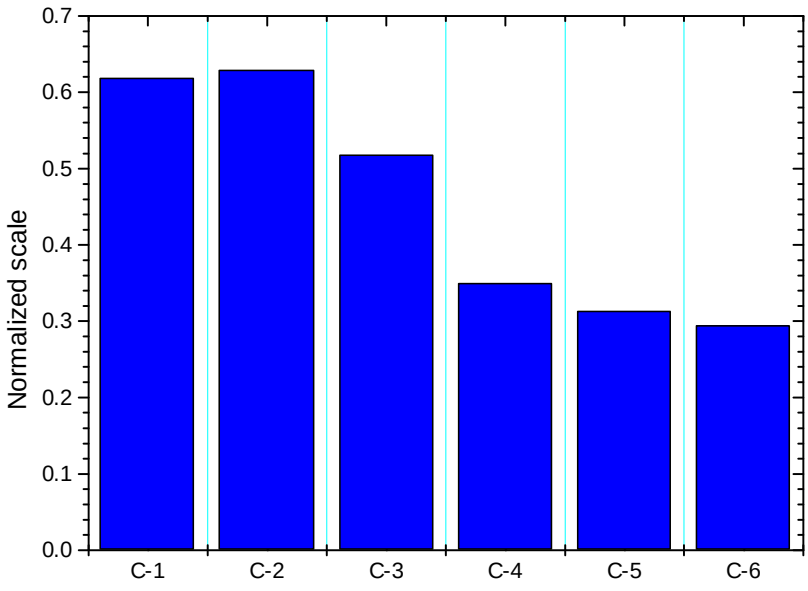

Figure 1. Average of student achievement.

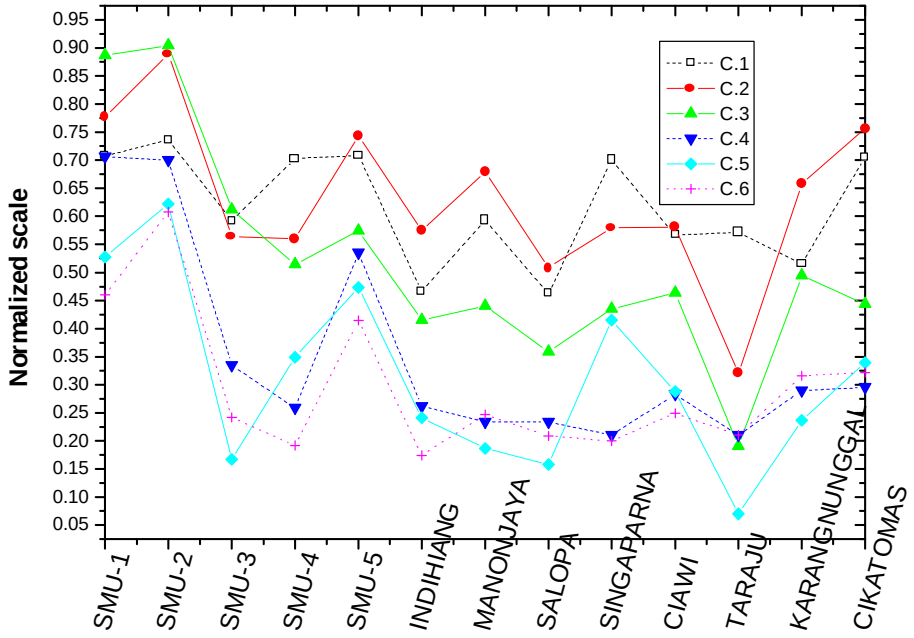

Figure 2. Student achievement based on location of the high schools. SMU-1 up to SMU-5 were located at urban area, Indihiang up to Ciawi were located at suburban area, and Taraju up to Cikatomas were located at rural area.

4. Discussion

From the finding mentioned above we found that student achievement in studying physics was very low. This was due to several factors, namely confusion in selecting operational words, lack of teacher's knowledge about selecting subject matter for each section of the cognitive domain, and inconsistency between teaching unit plan and teaching practice.

During interview with teacher and from study of teaching unit plan we found that some teachers still confused in using an operational word commonly used by two different sections. "Menghitung (to calculate)", for instant, is normally used for C-2 and C-3. Some teachers were carelessly used the operational word for the two sections. As a result, the teachers and we could not appropriately measure the intended section. Thus, it showed a low performance of student achievement. Similarly for others operational words commonly used by two or more different sections.

From classroom observation, we also found inconsistency between teaching unit plan and teaching practice. This problem caused confusion among students. Most student could not understand what had been being taught by the teachers. Consequently, the teachers did not achieve their general and specific instructional goals based on the sections of the cognitive domain.

5. Bibliography

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