"ENHANCING CRITICAL THINKING SKILLS BY USING THE REVISED BLOOM'S TAXONOMY - THE COGNITIVE DOMAIN"

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Abstract

We all know that Bloom's Taxonomy consists of three domains of educational goals and objectives; (1) Cognitive Domain, (2) Affective Domain, and (3) Psychomotor Domain. The major idea of this taxonomy is the process of thought which educators expect from students to emerge based on the educational objectives from less to more complex. This paper is a discussion of theories suggested by education experts who have dedicated their excellent ideas in enhancing students' thinking process by using Bloom's Taxonomy in mainly the Cognitive Domain. The writer finally concludes that the levels of thinking processes in the Cognitive Domain (remembering, understanding, applying, analyzing, evaluating, and creating) are in badly needed to be applied to enhance students' critical thinking.

Key words: Bloom's taxonomy, cognitive domain, critical thinking

Mempertajam Kemampuan Berfikir Kritis dengan Menggunakan Revisi Taxonomi Bloom – Ranah Kognitif

Abstrak

Sebagaimana kita ketahui bahwa Taxonomi Bloom terdiri atas 3 ranah sebagai bentuk klasifikasi tujuan pendidikan dan tahapan pencapaiannya, yaitu: (1) Ranah Kognitif (Pengetahuan), (2) Ranah Afektif (Sikap), dan (3) Psikomotorik (Ketramplian). Ide utama pada taksonomi ini adalah tahapan proses berfikir yang diharapkan muncul dari para peserta didik, sesuai dengan tujuan pendidikan, dari tingkat terendah sampai pada tingkat ketrampilan berfikir yang lebih kompleks. Makalah ini merupakan kajian teori dari para ahli pendidikan yang telah menyumbangkan ide cemerlangnya tentang bagaimana cara menajamkan proses berfikir peserta didik dalam kegiatan pembelajaran dengan menggunakan hasil temuan Dr. Benjamin Bloom dkk. khususnya pada ranah kognitif. Penulis akhirnya membuat kesimpulan bahwa tahapan proses berfikir pada ranah kognitif (yaitu remembering, understanding, applying, analyzing, evaluating, dan creating) perlu dilakukan oleh para tenaga pengajar untuk mempertajam peserta didik dalam berfikir kritis.

Kata kunci: taksonomi Bloom, ranah kognitif, berfikir kritis

A. INTRODUCTION

Most of us, as teachers, agree that one of the main goals of education is to teach students to think critically. What we always do in our teaching is then to gain students' ability to have careful, reflective thoughts. This is because students with learning disabilities, even students in general, often do not have well-developed critical thinking skills. The teaching of good critical thinking is, therefore, badly needed to enhance students' power of thinking. This is also to prepare them to be ready for future employment opportunities and to keep pace with the challenges of a today's modern society.

Learning the facts stated above, the writer tries to get answers of the following arising questions:

1. Why students often perform poor outcomes in their reading ability?
2. What is Critical Thinking Skills?
3. Is it easy to teach Critical Thinking Skills in any subjects?
4. What can we do to make students' envolved in the teaching process in the classroom?
5. Why using the Revised Bloom's Taxonomy?
6. What are the processes teachers can use to teach good critical thinking to the students?

In accordance with the title proposed, the writer focuses only in discussing as follows:

1. What is Critical Thinking Skills?
2. Why using the Revised Bloom's Taxonomy – the Cognitive Domain?

The writer realizes that sudent is to be moved and driven from just knowledge/ remembering based to higher and critical thinking forms of interaction. Unfortunately, however, he does not have clues to gain recovery from scratch in searching for answers to these complicated questions. What he can do is

investigating and deeply learning some experts' thoughts and/or theories which can be applied in his daily teaching activities. By sharing his findings to others, he then wants to get more inputs from the audiences to enlarge his thoughts as the feedback. He hopes that all of the discussions will be also useful for everyone, as English teachers, to improve their teaching abilities.

1. What is Critical Thinking Skills?

   Although a variety of definitions has been offered for years, most of them discuss the same underlying concepts and principles. Critical thinking refers to the use of cognitive skills or strategies that increase the probability of a desirable outcome. Critical thinking is purposeful, reasoned, and goal-directed. It is the kind of thinking involved in solving problems, formulating inferences, calculating , and making decisions. Critical thinkers use these skills appropriately, without prompting, and usually with conscious intent, in a variety of settings. That is, they are supposed to think critically. When we think critically, we are evaluating the outcomes of our thought processes; how good a decision is or how well a problem is solved (Halpern, 1996, 1998).

   According to Chaffee (2003), critical thinking is "Making sense of the world by carefully examining the thinking process, as well as to clarify and improve our understanding." Critical thinking is, therefore, more than learning everything by rote memory and doing multiple choice questions. It goes beyond them which means that critical thinking encourages the "how" and the "why" forms of thinking. Teachers are supposed to guide students to use their efforts to be better thinkers. However, the improvement of student thinking; from ordinary thinking to good thinking, depends heavily upon students' ability to identify and cite good reasons for their opinions (Matthew, 1988).

   Ennis (1987) suggests that "critical thinking is reasonable, reflective thinking that is focused on deciding what to believe or do." However

defined, critical thinking refers to a way of reasoning that demands adequate support for one's beliefs and an unwillingness to be persuaded unless the support is forthcoming.

Why should we concern about critical thinking in our classrooms? Obviously, we want to educate students, or people in general, whose decisions and choices will be based on careful, critical thinking. Maintaining the right of free choice itself may depend on the ability to think clearly.

2. Why using the Revised Bloom's Taxonomy – the Cognitive Domain?

In 1956, Benjamin Bloom and his colleagues published the *Taxonomy of Educational Objectives: The Classification of Educational Goals*, a book that classified educational goals according to the cognitive processes that learners must use in order to attain those goals. It was the original taxonomy of the cognitive domain for categorizing level of abstraction of questions that commonly occur in educational settings.

As education systems and practices are changing and very much different in this modern era, Anderson & Krathwohl (2001) revised and enhanced the taxonomy to make it more usable to be applied by educators. They were publishing their works in a book entitled *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives.* For the instructional designer, the taxonomy provides a comprehensive set of classifications for learners' cognitive processes that are included in instructional objectives. Classifying instructional objectives using this taxonomy helps to determine the levels of learning included in an instructional unit or lesson.

Based on the Revised Bloom's Taxonomy or classification of the cognitive domain or category (see Table 1) is a model of classifying thinking

according to six cognitive levels. The lower three levels include *remembering*, *understanding*, and *applying*. The higher three levels consist of *analyzing*, *evaluating*, and *creating*.

B. DISCUSSION

What steps to do to enhance students' critical thinking skills by using the Revised Bloom's Taxonomy?

According to Raymond (2000), a competent assistant (a teacher) can help students achieve what they learn thanks to the distance between what a student can do by themselves and the next learning. The different levels of thinking can help a student to perform better critical thinking skills which can result in doing better on papers, tests, and other assignments. Teacher may pose questions to encourage a higher level of thinking rather than asking students to cover the general recall of information. It means that all activities in the classroom, in any kind of subject, should be in the focus of engaging students to get deeply envolved in the teaching and learning. Teachers should prepare instructions or questions which need comprehensive responses and answers from students. Students should have more chance to solve problems, compare or distinguish objects, and set conclusions with their own creations as of the representatives of critical thinking. In short, there should be less of questions which need only remembering.

Cruz (2003) created a unique method of combining the language of Bloom's Taxonomy along with illustrating learning objectives. Studying the definitions and verbs will assist with a basic foundation or introductory subject. However, it will certainly not be of much assistance when a student reaches upper levels and more demanding classes. Once students can incorporate the ability to analyze, synthesize, or evaluate the subject matter, there should be an increase in their grades resulting in enhanced academic memory.

One mechanism a tutor can use to encourage critical thinking is to use scaffolding. Vygotsky defined scaffolding as the "role of teachers and others in supporting the learner's development and providing support structures to get to that next stage or level" (Raymond, 2000).

Using the information from Bloom as well as that of critical thinking, a teacher may present new informations. He or she should try asking questions and develop a list of questions that generate higher order thinking, such as the following: What do you already know about _____? Or what do you think is really going on?

The teacher should encourage specific responses and obtain the rationale for the students' opinion with questions that are structured to illicit a higher order response such as: What do you mean? Can you be more specific? What exactly do you mean by that? (see more example of questions on Table 2)

Teachers can assist with the elimination of the inability to view things from another's perspective by encouraging a student to see the problem, situation, or concept from a different viewpoint. Another method of encouraging students to function at a higher level is to have them analyze their own work and look for patterns in their thinking and in their mistakes.

C. CONCLUSION

By using the Revised Bloom's Taxonomy, we, as teachers, can get a very powerful tool in assisting our students to learn at a higher and more critical level. We need a minimal amount of time to think about the phrasing of higher level questions. However, it is easy to integrate this with the subject content we are delivering. If we shift from a content delivery-based process to problem-based learning, the emphasis will move to a collaborative process and

provide the student opportunities to develop the conceptual language of critical thinking.

Table 1. Categories and Cognitive Process

CATEGORIES	COGNITIVE PROCESS
Remember	**Retrieve relevant knowledge from long-term memory** RECOGNIZING (identifying) RECALLING (retrieving)
Understand	**Construct meaning from instructional messages, including oral, written, and graphic communication** INTERPRETING (clarifying, paraphrasing, representing, translating) EXAMPLIFYING (illustrating, instantiating) CLASSIFYING (categorizing, subsuming) SUMMARIZING (abstracting, generalizing) INFERRING (concluding, extrapolating, interpolating, predicting) COMPARING (contrasting, mapping, matching) EXPLAINING (constructing models)
Apply	**Carry out or use a procedure in a given situation** EXECUTING (carrying out) IMPLEMENTING (using)
Analyze	**Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose** DIFFERENTIATING (discriminating, distinguishing, focusing, selecting) ORGANIZING (finding coherence, intergrating, outlining, parsing, structuring) ATTRIBUTING (deconstructing)
Evaluate	**Make judgments based on criteria and standards** CHECKING (coordinating, detecting, monitoring, testing CRITIQUING (judging)
Create	**Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure** GENERATING (hypothesizing) PLANNING (designing) PRODUCING (constructing)

Table 2. Questions and Key Words for Critical Thinking

Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Exhibit memory of previously-learned materials by recalling facts, terms, basic concepts and answers.	Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas or quality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.
What is…? Where is….? How did...happen? Why did…? When did…? How would you show…? Who were the main…? Which one…? How is…? When did…happen? How would you explain…? How would you describe…? Can you recall…? Can you list the three…? Who was…?	How would you classify the type of….? How would you compare…? contrast? Will you state or interpret in your own words…? How would you rephrase the meaning…? What facts and ideas show…? What is the main idea of…? Which statements support…? Can you explain what is happening..? what is meant..? What can you say about..? Which is the best answer? How would you summarize?	How would you use…? What examples can you find to..? How would you solve__using what you've learned…? How would you show your understanding of ..? What approach would you use to …? How would you apply what you learned to develop…? What other way would you plan to…? What would result if…? Can you make use of the facts to…? What elements would you choose to change…? What facts would you select to show…? What questions would you ask in an interview with..?	What are the parts or features of…? How is __related to..? Why do you think..? What is the theme..? What motive is there…? Can you list the parts…? What inference can you make…? What conclusions can you draw..? How would you classify..? How would you categorize…? Can you identify the different parts..? What evidence can you find..? What is the relationship between..? Can you make a distinction between…? What is the function of…? What ideas justify..?	Do you agree with the actions..? with the outcome…? What is your opinion of ..? How would you prove…?disprove…? Can you assess the value and importance of..? Would it be better if…? Why did they (character) choose…? What would you recommend..? How would you rate the..? What would you cite to defend the actions…? How would you evaluate…? How would you determine…? What choice would you have made…? What would you select…? How would you prioritize…? What judgment would you make about…? Based on what you know, how would you explain…? What information would you use to support the view…?	What changes would you make to solve…? How would you improve…? What would happen if…? Can you elaborate on the reason…? Can you propose an alternative…? Can you invent…? How would you adapt___to create a different…? How could you estimate the results for..? What facts can you compile…? Can you think of an original way for the..? Can you construct a model that would change..?

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