



The Strategies to Improve Critical Thinking Skills Through Problem-Based Quantum Learning Model at Primary School

Elisabet Dyah Kusuma* ; Gunarhadi Gunarhadi; Riyadi Riyadi

Department of Primary Education, Sebelas Maret University
Email: elisabetkusuma02@gmail.com

<http://dx.doi.org/10.18415/ijmmu.v5i4.213>

Abstract

The urgency of this research is to get the idea of students with critical thinking at Primary Schools of Karanganyar Sub-district. Currently, the learning process is considered as a non-critical thinking method for students. This research used descriptive statistical method to illustrate students' critical thinking in detail at primary schools. Analysis of critical thinking was conducted on 156 students. The process of this analysis was measured by indicators of interpretation, analysis, evaluation, explanation, and conclusion. The results show that the students' skill in interpretation, analysis, explanation, and conclusion is at high level whereas there is a necessity to create a critical learning process of students to evaluate at the basic level in terms of improving critical thinking skills especially in the students' problem-solving aspect.

Keywords: Critical Thinking ability; Quantum Learning; Problems;

Introduction

Humans hold education to develop all their humanity toward positive goals. By education, they will achieve better. Humans are the only beings to be educated. By the education that we mean is special care (maintenance, support), discipline (training) and instruction, along with formation (Kant., 2007). Quantum Learning is one of learning models that enables students. Student activeness in this case is done happily, comfortably, easily and with a high success rate. Gunarhadi's research (2014) points out the results in which the t-Test findings show that quantum teaching strategies have a better impact on achievement at school. The research from Andrew W. Davis (2012) states that learning with Quantum Learning is able to create a fun learning atmosphere that has an impact on the gain of value. Quantum Learning is less constructive for students' thinking because the learning process only takes place in a fun but less effective way to instill the concept into students' thinking as well as requires a real experience and long time to provide motivation.

Nurzaman (2017) states that the use of real-life problems as something that students can learn to practice and improve critical thinking and problem-solving skills is to help students achieve their skills. Problem solving is also a need of social and emotional learning (Tarik., 2012). Learning through problems can improve critical thinking skills (Bingham., 2004). There are many definitions of critical

thinking (eg Brookfield., 1987; Kurnaz., 2014, Lipman., 1988; Meyers., 1986). Robert Ennis (1985, p. 45) defines critical thinking as sensible and reflective thinking focusing on determining what to believe or to do. Sternberg (1986, p. 3) defines this term as the mental process, strategy, and representation that people use to solve problems, make decisions, and learn new concepts. Although there are many different definitions of this term, critical thinking and its components were not identified until 1990 by a group of scientists who joined the Delphi Panel administered by Facione in the United States (Facione., 1990). In the Delphi Report, critical thinking is defined as an independent judgment that produces interpretation, analysis, evaluation, and conclusion, as well as an explanation of the evolutionary, conceptual, methodological, criteria, or contextual considerations underlying such a judgment based on (Facione., 2013, p. 4). Ennis (1995) shares six basic elements of critical thinking through approach of FRISCO (Focus, Reason, Inference, Situation, Clarity, and Overview). The first step of critical thinking according to Ennis is:

1. Focus

Introducing some situations, we must understand about what to discuss, main point, issue, what to ask or what to say. To hold it, we must focus on it because if we do not do so, we will waste the time. Ennis defines it as "the focus is ordinarily the conclusion".

2. Reason

Supporting the conclusion, we must have supporting reasons and decide the acceptable reasons. This is accomplished before we value the argument.

3. Inference

Assessing an inference is different from assessing a reason. We must assess acceptably and sufficiently to make a decision. Yet, inference gets ambiguity, more than one meaning, as Ennis says "Sometimes the word inference is used to mean conclusion, so that the conclusion of an argument would then be an inference".

4. Situation

When thinking focuses on trust and takes a decision, it is needed to support the situation that includes involving other people, other side. Environment is in it, both physical and social environments. It is not only a thinking activity but also the meaning of what to hold and to assess by the thinker.

5. Clarity

The most important thing in our writing and speech is clarity of what we have said. We must understand what to say and the other people must also understand what we say. By delivering a clear and explicit message, we will avoid an ambiguity. Moreover, clarity is the most important element in FRISCO.

6. Overview

In the overview, the thinker verifies about what to think.

Although teaching critical thinking does not guarantee better a living condition for future students' lives, it can train students to make decisions that affect the future. Making accurate decisions about their lives may make them more independent.

Teaching critical thinking takes time and effort, and knows the needs of students. Learning styles make teaching critical thinking easier (Rayneri, Gerber & Wiley., 2006). Furthermore, knowing the learning styles of students and teachers' teaching needs to have involvement of the subject (Boydak., 2008; Rudd & Baker., 2000). Critical thinking skills involve problem-solving processes that have become the major theme in researches and curricula throughout the world (Torner, Schoenfeld, & Reiss., 2007). Problem-solving activities require patience, but these activities make someone possible to work systematically and if he or she works slowly, many can succeed. In addition, troubleshooting does not have to be a difficult activity or not all difficult activities are problem solving. It shows that problem-solving activities can be provided for all students and should be provided for all students. (Arcavi & Friedlander., 2007).

Methodology

This research used descriptive statistical method to describe or explain the object being studied. Data collection used critical thinking experiments on learning activities based on interpretation, analysis, explanation, evaluation, and conclusion. The used instruments are arranged through conveying the deviation score 1-5. The details are as follows:

Table 1 Critical thinking skills of primary school student

| Skill Type | Score | Criteria |
|----------------|-------|-------------|
| Interpretation | | |
| Analysis | | 4.5: High |
| Explanation | 1-5 | 2.3: Medium |
| Evaluation | | 1 : Low |
| Conclusion | | |

Based on the table above, it is known that the critical thinking skills have several skill types of interpretation, analysis, explanation, evaluation, and conclusion with the score 1-5. The rule is that 4.5: High, 2.3: Medium, 1: Low.

Results and Discussion

When higher scores are presented to students, the higher the students' perception of their critical thinking skills. The population of this research is the fifth-grade students at Primary Schools in Karanganyar Sub-district with the number of 156 students. The following describes the level of students' critical thinking skills in schools with accreditation A and B.

Tabel 2 Students' critical thinking skills at accredited schools

| Skill Type | School with accreditation A | Criteria | School with accreditation B | Criteria |
|----------------|-----------------------------|----------|-----------------------------|----------|
| Interpretation | 4 | High | 4 | High |
| Analysis | 4 | High | 3 | Medium |
| Explanation | 3 | Medium | 3 | Medium |
| Evaluation | 4 | High | 3 | Medium |
| Conclusion | 4 | High | 4 | High |

In table 2, the difference of critical thinking in the school with accreditation A and the one with accreditation B is that the first category gets high score while the second one gets medium score. In the other skill, both of those categories get the same score, which is high score. The table shows that the average student skill is high interpretation. Interpretation skill is the transfer of information skills from one form to another; paraphrase, describe, translate and clarification (Anderson, Krathwohl., 2010). To measure this type of skill, we need two test descriptions to be done by students. First, the students must interpret applicable problems either with or without illustration. In this type of skill, they can interpret the illustrations and give reasons for their choice of answers. The average of student skill is in high analysis. Analysis is an activity that involves the fragmentation of the subject matter processed into small sub-sets and determines how the correlation between sub-sets and each sub-set as well as all structures. Analysis involves cognitive processes to differentiate, organize, and distribute (Anderson; Krathwohl., 2010). Measuring the analytical skills, students are asked to agglomerate several activities that involve problem analysis. The third critical thinking skill is evaluation. In the skill like this, the average skill of the Students is medium. Evaluation is a decision-making skill based on criteria and standards (Anderson, Krathwohl., 2010). In this type of skill, we need Two tests to be performed on the students. The first test is that they are asked to share the opinion of the solution on the conveyed problems as well as prevention done along with the logical and scientific reasons. The second test is about the application of thematic learning in schools. For the second test, the majority of students can answer the test due to its highly contextual nature since the application of the problems matches their environment. The fourth critical thinking skills are explanations. It explains why the occurrence of something can happen, whereas to solve the problem, the students are asked to diagnose the fault of the multifunctional system (Anderson, Krathwohl., 2010). In this type of skill, the students have to explain it clearly. The fifth skill of critical thinking is inference. It is the conclusion reached on the basis of knowledge or facts and finds the process of the system of examples (Anderson, Krathwohl., 2010). Measuring Student Skills in Conclusion, the teacher presents some illustrations about students who eat stale and spicy food over time and thus, their stomach aches. Based on the illustrations, students are asked to define disease prevention. Although the majority of students' skills are in high inference, some students are preventative with just a few words.

Conclusion

Critical Thinking Skill is a human thinking skill supported with trustworthy arguments. Therefore, it is the teachers' responsibility to improve students' critical thinking skills in thematic learning. Teachers should identify some basic skills in learning and teaching their students with the right system to apply in real situations. With critical thinking, students have the skills to solve the problems of their social life and daily life.

References

- Anderson, Lorin W; Krathwohl, David R. (2010). *Kerangka Landasan Untuk Pembelajaran, Pengajaran, dan Asesmen*. Agung Prihantoro (penerjemah). Yogyakarta: Pustaka Pelajar.
- Bingham, A. (2004). *Cocuklarda problem çözme yeteneklerinin geliştirilmesi*. Çev. A. F. Oğuzkan. İstanbul: Milli Eğitim Bakanlığı Yayınları.
- Boydak, A. (2008). *Learning Styles *Öğrenme Stilleri+*. İstanbul: Beyaz Publications.
- Dawis, Andrew. (2012). *The Effect of Quantum Learning on Standardized Test Scores versus schools that do not use Quantum Learning*. Northwest Missouri State University Missouri.
- Ennis. R. H. (1995). *A logical Basis for Measuring Critical Thinking*. *Educational Leadership* 4, 44-54.
- Facione, A. P. (1990). *The complete American Philosophical Association delphi research report*. Millbrae, USA: The California Academic Press.
- Gunarhadi, etc. (2014). *The Impact of Quantum Teaching Strategy on the Academic Achievements of Students in Inclusive Schools*. *Malaysian Journal of Learning and Instruction*: 11: 191-205.
- Kant, Immanuel. (2007). *Anthropology, History, and Education*. Mary Gregor dkk (penerjemah). New York: Cambridge University Press.
- Mayers, B. E. & Dyer, J. E. (2006). *The influence of student learning style on critical thinking skill*. *Journal of Agricultural Education*, 47(1): 43- 52.
- Nurzaman, (2017). *The Use of Problem Based Learning Model to Improve Quality Learning Students Morals*. *Journal of Education and Practice*. ISSN 2222-1735, 8(9).
- Roberts, R. D., Beh, H. C. & Stankov, L. (1985). *Hick's law, competing-task performance, and intelligence*. *Intelligence*, 12: 111-130.
- Sternberg, R. J. (1986). *Teaching critical thinking: Eight easy ways to fail before you begin*. *The Phi Delta Kappan* 68(6): 456 -459.
- Totan, T. (2011). *The effect of problem solving skills training on the social and emotional learning needs and abilities of 6 th grade students* 1 *Problem çözme becerileri eğitiminin ilköğretim altıncı sınıf öğrencilerinin sosyal ve duygusal öğrenme ihtiyaçları ve becerileri*, 11(3): 813–828.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).