Critical Thinking Skill: Primary School Teachers' Knowledge and Its Learning Strategy

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Abstract

Critical thinking is a vital piece of learning in the 21st century. Critical thinking skills cannot be grasped instantly; to be able to think critically, someone requires a protracted process. Therefore, teaching critical thinking skills in primary schools is essential. Thus, the teacher as the one who is responsible for teaching students at school must have a deep understanding about critical thinking. This study aims to define primary school teachers' understanding of critical thinking. A qualitative approach with the phenomenological method was used in this study. Participants in this study were 8 primary school teachers in Indonesia who came from Bandung and Yogyakarta. Data collection was brought using in-depth interviews. Data analysis was taken using Miles & Huberman model. Data analysis was collected about primary school teachers' understanding of critical thinking, the importance of critical thinking, teaching critical thinking to primary school students, and measuring critical thinking abilities. The results show that although teachers know the significance of teaching critical thinking, their knowledge and capability to think critically could be better.

Keywords: critical thinking, primary school teacher, learning strategy.

1   Introduction

The acceleration of 21st century life brings challenges for everyone. Because of the rapid development of science and technology, everyone must be able to adjust to these conditions. Education is one aspect that needs to be prepared to create people who can survive in the face of massive competition in this era [7]. One of the challenges faced in education is the need to build a generation with good critical thinking skills [20]. People who are responsible to build those generations are government, teachers, and stakeholders.

As a policymaker, the government has a significant role and responsibility to pave the way to build a generation that can think critically, not only academically but also in everyday life [17]. Apart from the government, teachers also play a massive role in

improving the quality of education in a country [11] because they are the ones who will be directly involved in instilling critical thinking skills in students. Therefore, teachers' ability and innovation in learning are things that significantly influence the success of educational implementation.

The learning and innovation skills needed in the 21st century is 4C, which includes critical thinking, creativity, communication, and collaboration [2]. Critical and creative thinking skills are formed in abstract thinking, while communication and collaboration are formed in concrete skills [24]. Furthermore, critical and creative thinking skills are classified as high-level thinking skills [10], which must be trained repeatedly regularly to become a positive habit for each individual [25].

Critical thinking skills are an essential component for an individual to solve new problems in the 21st century [12]. Critical thinking refers to careful and precise consideration to solve problems [23]. Critical thinking skills also play an important role in conceptualizing, applying, analyzing, synthesizing, and evaluating information gathered or generated by observation, experience, reflection, reasoning, or communication to guide beliefs and actions [26]. Therefore, in classroom teaching activities, critical thinking abilities are measured using tasks, including analyzing, synthesizing, and evaluating conceptual and procedural knowledge, or metacognition. Thus, getting students to think critically is vital to help them prepare to solve problems, adapt and make decisions about new issues.

Students must be taught critical thinking skills during the learning activities [9]. The skill needs to be drilled through learning activities supporting its development. One of the best ways is to use appropriate learning methods such as contextual teaching and learning [8], group-based activities [21], inquiry-based teaching [13], student-centered [5], project-based learning [18], and problem-based learning [4].

Students' critical thinking improvement depends on the teacher's role in planning, implementing, and evaluating the critical thinking-oriented learning activities. Teachers must be able to think critically and know how to teach it to students suitably [25]. However, several investigations show that primary school teachers still need assistance training students' critical thinking skills, especially in developing questions that stimulate students' critical reasoning [3] and creating appropriate teaching media [19]. This is why elementary school students' critical thinking abilities are still low.

Therefore, assessing primary school teachers' knowledge of critical thinking and its learning strategies is required. Through this research, it is expected that a comprehensive view of it will be obtained. This information helps in planning programs that can increase primary school teachers' understanding of critical thinking and its learning strategies. Hence, this research intends to represent primary school teachers' knowledge about critical thinking and their teaching strategies in the classroom.

2   Method

A qualitative study with a phenomenological approach was used in this investigation. This study investigates primary school teachers' understanding of critical thinking skills and its teaching strategies through in-depth interviews.

Participants were 10 primary school teachers (six women and four men) from 10 public schools, 5 schools in Bandung and 5 schools Yogyakarta, Indonesia. They are

selected randomly. All teachers have at least five years of teaching experience and are teachers with civil servant status. However, in the middle of the data collection, two teachers (women from Yogyakarta) only participated in the beginning, so the total number of participants at the end was 8.

Interviews were conducted to obtain credible information regarding primary school teachers' knowledge of critical thinking abilities. Therefore, for research purposes, the teachers' identities were kept secretly by being coded (PT1-PT8) to ensure their answers would not impact their profession as teachers. These interview questions were validated by two critical thinking experts. The interview topics contained four main components: 1) Teacher knowledge about critical thinking, 2) the importance of critical thinking, 3) strategies for teaching critical thinking to primary students, and 4) measuring and assessing critical thinking. This test also estimates teachers' critical thinking by asking questions that meet the critical thinking indicators, there are: 1) Teachers' knowledge about the definition of critical thinking; 2) Teachers' knowledge about the importance of critical thinking; 3) Teachers' knowledge about implementing critical thinking in primary school; 4) Teachers' knowledge about improving students' critical thinking; and 5) Teachers' knowledge about measuring and assessing critical thinking.

Interview data were analyzed and presented in table form to be grouped according to the four components measured. Analysis of interview data was described using the Miles & Huberman [15] technique to determine the relationship between the components.

3   Result & Discussion

3.1   Result

The results define data related to teachers' perceptions of learning activities to instill critical thinking skills. Teacher perceptions are classified into primary school teachers' understanding of critical thinking, the importance of critical thinking, teaching critical thinking to primary school students, and measuring critical thinking abilities.

Primary school teachers' understanding of critical thinking.

The analysis and data reduction results related to teachers' understanding of critical thinking show that their knowledge of critical thinking still needs to improve. This can be seen from the explanation the teacher gave, which is still general. Field data shows that teachers have yet to be able to precisely explain critical thinking and how to teach it (Table 1). The data of teacher test results related to critical thinking skills show that they can answer questions that ask for conceptual answers. Still, they need help explaining the inferences and situations related to the answers. This indicates that most of them need help understanding what critical thinking means. Teachers still cannot differentiate between learning activities that have developed critical thinking skills and those that have not. Even though the term critical thinking is very familiar in various training and curriculum outreach activities, teachers need help understanding its definition.

Table 1. Teachers' knowledge about the definition of critical thinking.

The definition of critical thinking	Verification mark
Think in a more profound way.	Not all teachers have the correct understanding of critical thinking.
The ability to see things in detail.	
Can express opinions well.	
A method of looking at something from many perspectives with an in-depth view.	
A way of thinking accompanied by logical reasons.	
The ability to judge things deeply.	
The capacity to see problems in detail.	
Think in a deeper way.	

The importance of critical thinking

Table 2 contains the data analysis findings and reduction of primary school teachers' understanding of critical thinking. Teachers' comebacks to the second point confirm that most teachers remarked that the capability to think critically is vital to master because of its benefits in solving diverse and challenging problems. Therefore, critical thinking-oriented learning is implied in teaching and learning activities in the classroom because it will build students' abilities to solve various problems they encounter in everyday life.

Table 2. Teachers' knowledge about the importance of critical thinking.

The importance of critical thinking	Verification mark
Critical thinking can help students get a better education.	Most teachers are aware of the importance of mastering critical thinking skills for students.
If they are critical, they will be able to speak with confidence.	
By thinking critically, students will learn more efficiently.	
They will be able to solve various types of problems encountered.	
Students will be helped because they are used to thinking in more detail and depth.	
Train high-level thinking skills.	
Students will be able to differentiate between good and bad.	
Critical thinking will help them to survive at school and in the environment.	

Other responses show the importance of critical thinking skills in students, making it easier for students to learn. Based on the teachers' responses, they are still debating the importance of critical thinking. Teachers stated that critical thinking was used to train children to solve problems. Based on these responses, it can be concluded that teachers already know the importance of critical thinking. Most teachers realize the importance of mastering critical thinking in children from an early age.

Teaching critical thinking to primary school students

Teachers were asked to explain critical thinking-based teaching strategies for the third issue. They are expected to be able to describe appropriate learning models for enhancing critical thinking in their classes. The results can be seen in Table 3.

Table 3. Teachers' knowledge about implementing critical thinking in primary school.

How to teach critical thinking	Verification mark
Provide critical-based evaluation.	Teachers know that teaching critical thinking skills must be integrated into learning activities.
Equip critical literature.	
By supplementing the quality of reading materials.	
We are using fun teaching methods.	
I am teaching using the active student method.	
We are inviting students to think about learning.	
I am using a problem-based method.	
Provide an evaluation that refers to Bloom's theory.	

Data shows that teacher understanding in teaching critical thinking has a positive impact. Teachers believe teaching students to think critically can be accomplished through various learning models. The investigation results show that teachers already know that teaching critical thinking to students can be achieved through problem-solving-based learning activities. The explanations teachers give show their understanding of implementing project-based learning activities, problems, inquiry learning, cooperative learning, and active learning to enhance students' critical thinking.

Table 4. Teachers' knowledge about improving students' critical thinking.

How to improve critical thinking	Verification mark
Encourage students with more critical learning activities.	Conceptually and operationally, most teachers have yet to be able to explain the appropriate strategies for improving students' critical thinking abilities through learning.
Using problem-based learning methods.	
Accomplishing the character-based learning activities.	
Providing good quality reading and study materials.	
Ask students to think critically during learning.	
Provide high-level evaluation.	
Train with reading and evaluation at a high critical level.	
Create books and games that can hone critical thinking	

Data on teacher comprehension in enhancing students' critical thinking skills can be seen in Table 4. At this point, teachers must define learning activities to improve students' critical thinking skills. Data shows that teachers still need to determine how to enhance students' critical thinking abilities conceptually and operationally.

Measuring critical thinking abilities

The outcomes of analysis and data reduction are summarized in Table 5. The teachers' comebacks show that some can measure and assess critical thinking skills by describing, confirming based on observations and presentations, and giving scores.

Table 5. Teachers' knowledge about measuring and assessing critical thinking.

How to measure critical thinking	Verification mark
Provide evaluations that meet critical thinking standards.	Technically, teachers are already aware of what instruments they can use to measure students' critical thinking abilities.
Conduct direct interviews or essay-based tests.	
Provide open-ended evaluations.	
Conduct problem-based assessments.	
Conduct process-based assessments.	
Tests and observations carry out assessments during the learning process.	
Create assessment instruments that accommodate high-level thinking abilities.	
Carry out tests in the form of essays and open-ended questions.	

The results are precise in that teachers know various instruments suitable for measuring critical thinking skills, such as essays with contextual problems. Another response explained that one way is to carry out process assessments during learning activities so that the evaluation taken by the teacher does not only assess the results. These answers show that the teacher understands the instruments to measure critical thinking skills conceptually. However, these responses only define the assessment process in the problem-solving stage; they have yet to be able to explain how to measure critical thinking skills using Bloom's taxonomy.

3.2   Discussion

Implementing the learning curriculum, one component that must be achieved is critical thinking skills [22]. In the stages of Bloom's taxonomy, critical thinking skills occupy the top three dimensions: analysis, evaluation, and creation. In theory, teachers should familiarize these skills with students, both in learning activities and daily life [6].

However, the findings of this research show that teachers still need to understand the concept of critical thinking. The results showed that teachers need more appropriate strategies to train their students' critical thinking skills. Referring to this problem, socialization is still required to deepen understanding regarding critical thinking skills. Other than that, training critical thinking ability is also necessary to introduce critical thinking-based learning to elementary school teachers. These socialization and training activities are important for teachers in strengthening their understanding of critical thinking skills. Previous research shows that training activities for primary school teachers regarding the 2013 curriculum [1] or the independent curriculum [14] still need to be enhanced. This allegedly results in teachers' narrow ability to understand the competencies that must be taught to students, including the ability to think critically.

Critical thinking is one essential thing that can be used to calculate the success of curriculum implementation. The main reason why students must be able to think

critically is because the problems that arise in life are increasingly complex [16]. Therefore, critical thinking skills are fundamental to be taught in the learning process so that students can solve life problems appropriately and contribute to society.

Conceding the significance of critical thinking, teachers must teach students these skills. The learning activities must prepare students' thinking abilities. Several research results show the need to change traditional to innovative learning methods in teaching critical thinking skills. These innovative methods are student-centered learning [5], using constructivism, and providing opportunities for students to explore their problem-solving abilities [18]. Some learning models include group-based activities [21], inquiry-based teaching [13], student-centered [5], project-based learning [4] and problem-based learning [14]. The research results also show that most teachers know that teaching critical thinking skills to students can use various learning models such as contextual teaching and learning, group-based activities, inquiry-based teaching, student-centered, project-based learning, and problem-based learning. The teachers stated that using questions based on high-level thinking skills with contextual problems was an appropriate strategy for training critical thinking skills. In general, teachers have received training on implementing the 2013 Curriculum. They may also get information about learning models from teacher textbooks or other references. However, teachers' knowledge of various learning models cannot be used to measure teacher success in teaching critical thinking. Teachers also need to know the activities in each learning model to improve their critical thinking abilities. The teacher needs to pay attention to these activities.

4   Conclusions

The results of this study show that not all primary school teachers understand critical thinking skills sufficiently. Teachers still need to differentiate critical thinking in terms of abilities, skills, methods, models or learning activities. Teachers already understand the importance of critical thinking skills for students. However, teachers' knowledge about the essential significance of thinking still needs to be improved, and this is not accompanied by in-depth knowledge about learning that can hone critical thinking. Even though teachers already understand that students can be taught to think critically through learning models (for example), they still need clarification about how to apply them.

Even though teachers are the main actors in executing a learning process that can hone students' critical thinking, all educational institutions have the same responsibility to improve education in the country. The government and education experts must find solutions to overcome this problem. One solution that can be delivered is to provide outreach and training to teachers regarding learning that can teach critical thinking, especially at the primary school level. Apart from that, the availability of learning resources such as books and others need further attention from the government, schools, and education experts.

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