

# **Critical Thinking and Reflective Thinking Skills in Elementary School Learning**

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## **ABSTRACT**

Various information is often circulating around us. We are accustomed to trusting information right away and rarely question its truth. In order not to get caught up in this, we must be able to criticize the information obtained. This ability needs to be developed in all circles, both prospective teachers and students. Through a reflective thinking process, one can train critical thinking skills by conducting in-depth studies of scientific knowledge and develop creative thinking skills by carrying out scientific studies to be able to apply them to new situations. The reflective thinking ability of teachers in lessons will also affect students' critical thinking skills. Critical thinking skills require continuous guided training so that students are trained and skilled. Critical thinking skills are an indicator that shows the level of reflective thinking skills. Learning models that apply reflective thinking skills need to be applied in higher education and basic education. This method can direct prospective teachers and students to the next level of thinking.

**Keywords:** *Critical Thinking, Reflective Thinking, Elementary School, Thinking Skills*

## **1. INTRODUCTION**

The rapid development of technology, especially the internet, has resulted in a fast flow of information exchange. Information that circulates sometimes not all contains facts, but not infrequently contains things that are not true (hoax). Mostly, the student was amazed to find the two-faced website veracity [1]. If we cannot filter the information that is circulating properly, it is not impossible that we can judge something wrongly, so that we can make decisions or actions that can harm others or ourselves.

One way to respond to the information circulating us is by criticizing the information we get by looking for various knowledge from various sources, analyzing it, then assessing the information we get for later consideration in making decisions or actions. This attitude would be nice to be raised from an early age or children so that it will become a positive habit of looking at information and making decisions in the future. Therefore, it is important to foster critical thinking since elementary school, because this stage is the initial foundation for someone to form their mindset. The

concept of critical thinking is needed for a student in a college-level academic curriculum and supported to attain a certain aim to introduce the critical thinking concept into the K-12, such as elementary schools [1],[2].

One way to practice critical thinking is to get students to think reflective. Aryani et al. research shows that the learning model that applies reflective thinking skills can effectively improve students' critical skills [3]. Through a reflective thinking process, train critical thinking skills by conducting in-depth studies in scientific knowledge and developing creative thinking skills by conducting scientific studies to be able to apply them to new situations.

## **2. REFLECTIVE THINKING**

In everyday life, humans are faced with a problem. Humans will be stimulated to find out how to solve the problems they face. Efforts to solve problems are closely related to the thought process. The thought process is a process carried out by a person in recalling knowledge that has been stored in his memory for a time to be used in receiving information, processing, and concluding

something [4]. The thought process is a psychic activity that occurs consciously by the wishes and occurs when someone encounters a problem to solve. Tisngati explained that solving problems requires a series of information obtained from experience, one of which is through a reflective thinking process [5]. Gurol defines reflective thinking as a process of directed and precise activities where individuals analyze, evaluate, motivate, get the deep meaning, use appropriate learning strategies [6].

Reflective thinking is a step to understand yourself. According to Schippers, self-reflection enables individuals to actively understand events in terms of their conceptions of reality [7]. The main purpose of reflection is to find out what they know and what they need to learn. According to John Dewey, reflective thinking is an active, careful thinking process based on a thought process that leads to definitive conclusions [8]. Based on this, it can be said that reflective thinking is a person's ability to select and use the knowledge he has to solve a problem. John Dewey argues that the reflective thought process follows the following steps: (1) recognizing and identifying problems; (2) limiting and formulating problems; (3) formulate alternative solutions to problems; (4) develop problem-solving ideas and weigh the consequences; (5) apply the solution to the problem that has been determined or selected, then use the results as a consideration in concluding.

Reflective thinking is a process by connecting the knowledge that is already owned and that is being studied in analyzing problems, evaluating, concluding, and deciding the best solution to a given problem. Prayitno argued that reflective thinking is a process that occurs when a person experiences a collision (perplexity) and makes an investigation until he finds a solution [9]. Meanwhile, Taggart defines reflective thinking as the process of making information and making logical decisions about education, then assessing those decisions [10]. Self-reflection provides an opportunity for someone to reason about how to interpret one's thoughts and actions. The process of self-reflection allows a person to relate information to previous experiences and knowledge.

## ***2.1 Reflective Thinking for Teacher***

In learning, reflective thinking also needs to be applied by the teacher. Gurol stated that reflective thinking provides an advantage for teachers to make it easier to solve many problems in the classroom [6]. According to Choy and Oo, teacher reflection can generally be characterized as retrospection, problem-solving, critical analysis, and turning thoughts into action. Reflective thinking has characteristics, namely: (1) reflection as a retrospective analysis, (2) reflection as problem-solving, (3) self-critical reflection, and (4) reflection on self-belief and self-efficacy [11].

Teacher reflection as a retrospective analysis is the ability to assess yourself. Reflection is positioned as thinking that navigates the teacher to include previous experiences so that they can influence current teaching practice. Thus, the good and bad practices of teachers are influenced by previous experiences. Teacher reflection as a problem-solving process is an awareness of how a teacher learns to solve problems. Teacher reflection is needed to analyze and articulate problems before taking action. So that it is possible to take more constructive action. This is a better preventive measure than implementing a fix [12]. But, it's not easy to practice in class. The teacher mostly cannot practice what's the need and their knowledge.

Critical self-reflection is a continuous self-development and improvement. Critical reflection can be thought of as the process of analyzing, reconsidering, and questioning experiences in the context of broad issues such as ethical practice, learning theory, and the use of technology [12]. The feelings and beliefs teachers have in themselves and others will play a role in how they teach. The teacher's reflective thinking ability of the lesson will also affect students' critical thinking skills. Thus, the current investigation focuses on the reflective practices of teachers when planning their lessons, these teachers' perceptions of themselves, their students, and their work. It attempts to study teachers' reflective practice and how it affects their teaching.

## ***2.2 Reflective Thinking for Students***

Not only teachers, Gurol explained that reflective thinking is also needed to help students [6]. Students will gain insight into the learning that is being followed, monitor the course of learning, and set new goals for future learning to support student activities. Through reflective thinking, it can be used as a stepping stone to bridge the gap between goals and achievements for improvement in the future. So that it can measure the effectiveness in achieving learning goals.

One of the important roles of reflective thinking is to act as a tool to encourage the thinker during problem-solving situations because it provides an opportunity to step back and think of the best strategy for achieving a goal. In each subject, students will be trained to solve problems in various contexts. Sabandar stated that the ability to think reflective includes the ability to think critically and think creatively as well as other thinking skills, will have the opportunity to be raised and developed when students are in an intense process of problem-solving [13].

Skemp stated that the reflective thinking process can be described as follows, (1) the information or data used to respond, comes from within (internal), (2) can explain what has been done, (3) is aware of mistakes and improve it, and (4) communicate ideas with symbols or images rather than with direct objects [14]. Suharna et al.

explained that the reflective thinking process of elementary school students is reflected in several indicators in the problem-solving process [15]. From the two opinions above, it can be seen that elementary students can apply reflective thinking in solving a problem following the existing stages.

### 3. CRITICAL THINKING

In presenting learning in the classroom, teachers should facilitate students in developing critical thinking processes, for that, teachers need to stimulate students so that students are encouraged to reflect on their abilities. Krulik and Rudnick argue that what includes critical thinking is thinking that tests, questions, connects, evaluates all aspects that exist in a situation or a problem [13]. As previously explained, the ability to think reflective of teachers on lessons will also affect students' critical thinking skills. Critical thinking is characterized by the process of generating or constructing (construct) alternative solutions and evaluating (evaluating) various alternatives so that they can be taken into consideration to produce decisions (products). So that critical thinking skills need to be developed to help students solve the problem appropriately.

Critical thinking promotes an individual who is rational, capable of reflective thinking, and can make decisions based on careful consideration. Abdullah defines critical thinking, namely mental activities carried out in the syntax of the scientific method, namely: understanding and formulating problems, collecting and analyzing necessary and reliable information, formulating presumptions and hypotheses, testing hypotheses logically, drawing conclusions carefully, evaluating and decide something to believe or something to do, and predict the possible consequences [16]. According to Ennis, critical thinking is a thought process that occurs in a person and aims to make reasonable decisions about something that he can believe is true and what will be done later [17]. So, critical thinking is a mental activity with scientific steps to make decisions with careful consideration. Watson and Gleser proposed four skills related to critical thinking, namely (1) the ability to define problems, (2) the ability to select relevant information to solve problems, (3) the ability to develop and select relevant hypotheses, and (4) the ability to legitimize conclusions and evaluate inferences [18].

Meanwhile, Ennis stated that there are four areas of critical thinking, namely, clarification, basis, inference, and interaction [17]. *Clarification* is the ability to identify the focus, analyze arguments, ask and answer clarifying questions, and define the terms used. *Basis* refers to the ability to support inference and judge evidence. *Inference* includes evaluating activities on deduction and induction as well as making decisions about value. *Interaction* focuses on interacting with others and deciding on action. Interaction includes activities: (1) identifying problems,

(2) selecting criteria for deciding possible solutions, (3) formulating alternative solutions, (4) deciding what to do tentatively, (5) examining taking into account the situation, and (6) monitoring implementation.

From the definition of critical thinking above, then critical thinking is a mental activity that is carried out using the following steps: (1) understanding and formulating problems in mathematics, (2) gathering the necessary information that can be trusted, (3) analyzing the necessary information by clarifying information what is needed and what is not needed, (4) formulating conjectures (allegations) or hypotheses, (5) proving conjectures or testing hypotheses with logical rules, (6) drawing conclusions carefully (reflective), (7) evaluating, (8) making decisions, and (9) estimating and generalizing. In its application, applying critical thinking is not easy. There are difficulties faced, both caused by internal and external factors. According to Anugraheni, the difficulties that are often experienced in fostering critical thinking are difficulties in determining alternatives to the problems given, difficulties in choosing and solving problems, and problems that are difficult to understand [19]. Therefore, critical thinking skills need continuous guided training so that students are trained and skilled.

### 4. THE RELATIONSHIP OF REFLECTIVE THINKING AND CRITICAL THINKING

Reflective thinking is a process to find solutions to a problem. Sivaci's research shows that there is a significant relationship between reflective thinking tendencies, and the ability to solve social problems in prospective teachers [20]. Also, it can be seen that the prospective teacher's reflective thinking skills reach a high level. The ability to think reflective accounts for half of the problem-solving process. Students need to master reflective thinking skills so that students are skilled in solving existing problems. Conditions in the field can reflect how the students' reflective thinking skills in learning.

The results of research conducted by Putri & Mampouw show that students who have a high level of mathematical ability also have good reflective thinking skills [21]. Female students tend to have the ability to think reflective in all the questions or problems given. Meanwhile, male students solve problems with the help of illustrations such as making pictures. This is different from female students who solve problems by writing known, asked, and answered. So, it can be seen that the level of reflective thinking skills of students is influenced by mathematical abilities and gender.

Also, the ability to think reflective of prospective teachers who are still receiving higher education can affect their ability to teach in class. So, it is important to have an effort to improve the reflective thinking skills of

prospective teachers. In Norton's research, it was found that dialogue journals, campus seminars, and teacher professional development seminars play an important role in improving teacher abilities [22]. When campuses hold this type of program, each activity can train the ability of prospective teachers to apply theoretical principles in their implementation when teaching. So, by holding this activity, it can improve the skills and practice of reflective thinking of prospective teachers. In addition to reflective thinking, it is also necessary to know how the development of critical thinking skills is. Research conducted by Azizah et al. showed that elementary school students were able to think critically in learning mathematics. Students are grouped into four classifications based on their level of critical thinking skills. 42.2% of students belonged to the very critical category, 44.3% of students fall into the critical category, 10.3% of students are in the non-critical category. Only 3% of students fall into the very uncritical category [23].

Reflective thinking is a connector between a concept and its application in life. When someone uses reflective thinking skills, he will think much more effectively and consistently. So that the problems it faces in everyday life will be resolved. A teacher has an important role in stimulating students to think reflective. Reflective thinking is closely related to critical thinking. Erdogan's research results show that the level of critical thinking skills of teacher candidates is at high and medium levels [24]. Differences in the critical thinking skills of prospective teachers are reviewed based on gender and academic achievement. There is a positive relationship between critical thinking skills and reflective thinking skills of teachers. Critical thinking skills are one indicator that shows the level of reflective thinking skills of prospective teachers. Based on the results of this study, it was explained that 24% of the critical thinking skills variable was a reflection of reflective thinking skills. The results of this study are in line with research conducted by Semerci proved that there is a relationship between reflective thinking and critical thinking with a significance value of  $r = 0.68$  and  $r = 0.611$  [25].

Several attempts can be made to improve reflective thinking and critical thinking skills. This can happen because these representations overlap with each other. Aryani et al. research shows that the learning model that applies reflective thinking skills can effectively improve students' critical skills [3]. Learning models that apply reflective thinking skills need to be applied in higher education and basic education [26]. This method can direct prospective teachers and students to the next level of thinking.

## 5. CONCLUSION

Reflective thinking is a process by connecting the knowledge that is already owned and that is being studied in analyzing problems, evaluating, concluding, and

deciding the best solution to a given problem. The process of self-reflection allows a person to relate information to previous experiences and knowledge. So that it can measure the effectiveness in achieving learning goals. Elementary school students have to be able to apply reflective thinking in solving a problem following the existing stages. Because of the ability to think reflective accounts for half of the problem-solving process. Beside it, the teacher's reflective thinking ability of the lesson will also affect students' critical thinking skills.

Critical thinking is characterized by the process of generating or constructing alternative solutions and evaluating various alternatives so that they can be taken into consideration to produce decisions (products). So that critical thinking skills need to be developed to help students solve the problem appropriately. Elementary school students were able to think critically in learning mathematics. Therefore, critical thinking skills need continuous guided training so that students are trained and skilled. Critical thinking skills are one indicator that shows the level of reflective thinking skills. It directs prospective teachers and students to the next level of thinking.

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