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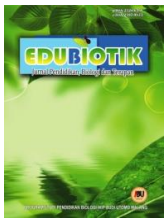

*Research Article*

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# An analysis of preservice teachers critical thinking skills at Universitas Islam Balitar

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**ABSTRACT**

The industrial revolution 4.0 in the 21st century presents its own challenges for all groups, including preservice teachers, to be able to quickly adapt to the progress of the times and technology, and solve all problems quickly, precisely, and wisely. To face the challenges of the 21st century, students need good critical thinking skills. By possessing good critical thinking skills, students can plan, monitor, and evaluate the steps they take both in learning activities and in problem solving. This study aims to describe the critical thinking skills of preservice teachers at the Faculty of Teacher Training and Education (FKIP) of Universitas Islam Balitar. This survey research was conducted in April–August 2020 with a total sample of 118 students from the Biology Education, Pancasila and Civic Education, English Education, and Elementary School Teacher Education study programs. Critical thinking skills were measured by an essay test and analyzed with the critical thinking rubric developed by Zubaidah et al. The data were analyzed descriptively. The results showed that the students' critical thinking skills were in the underdeveloped category.

**Keywords:** Critical thinking skills; preservice teachers; students

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## INTRODUCTION

The era of the industrial revolution 4.0, which is marked by digitalization, big data, automation, artificial intelligence, and robotics, poses a big challenge to all elements of society (Afrianto, 2018), including preservice teachers in Indonesia. With the acceleration of world change, the rapid cycle of disruption in industry, and the growth of automation, an individual must have learning agility (Stürmer et

al., 2016), that is, the ability to learn, adapt, and apply something quickly (McGowan & Shipley, 2020). If not, it is possible that the role of students as teacher candidates will be replaced by robots in the future. Therefore, students must learn how to have good learning strategies and to adapt quickly (Lapitan et al., 2021). A person's success in learning is determined by his/her ability to prepare strategies and everything needed in learning, such as the ability to control the learning process and evaluate learning outcomes. This ability is called metacognitive awareness (Kautzmann & Jaques, 2019; Yüksel & Yüksel, 2012).

A metacognition analysis has been carried out at the Faculty of Teacher Training and Education, Universitas Islam Balitar (Sholihah & Sofiyana, 2022). The results of the study showed that the metacognitive awareness of preservice teachers at UNISBA Blitar was high (a range of scores of 35–49). Procedural knowledge had the highest percentage value in the aspect of metacognitive knowledge. In the aspect of metacognitive regulation, the highest score was in the correcting

indicator (93.75%). Meanwhile, the lowest score was on the evaluating indicator (76.25%).

Metacognition is a person's ability to understand how to think or understand the process of cognition by involving the components of planning (functional planning), controlling (self-monitoring), and evaluation (self-evaluation) in solving problems (Hong et al., 2020; Palennari, 2016). Metacognitive awareness also helps students meet the demands of the 21st century competencies (Akinmola, 2014; Karatas & Arpaci, 2021). Partnership for 21st Century Skills (P21) identifies the competencies needed in the 21st century, namely 4-C, including communication, collaboration, critical thinking, and creativity (Anggraeni & Sole, 2022; Bertsch, 2022; Iriani & Handoyo, 2020; Mullen, 2020). Based on these four competencies, metacognitive awareness has a major influence on one of the competencies, namely critical thinking (Cakici, 2018; Gholami et al., 2016).

Critical thinking is one of the 21st century skills that needs to be possessed by students and empowered in higher education (Boholano, 2017). This skill is crucial to recognizing and exploring one's potential to become independent, tough, and able to perform important self-development, which must be continuously trained and evolved (Davies, 2015). Thinking skills are one of the assets that students must have in dealing with the development of science and technology. This is because a person's success depends on his/her thinking ability, particularly in solving life problems. Critical thinking is an ability that affects one's future life, so it will lead a person to make good decisions. Partnership for 21st Century Skills has identified critical thinking as one of the necessary skills to prepare students for education and work (Soulé & Warrick, 2015; van Laar et al., 2017). Students with good critical thinking skills will be able to access, analyze, and synthesize information to solve problems quickly and precisely in the future (Razzouk & Shute, 2012).

Critical thinking skills are pivotal for students to equip them later after graduating from college and entering the community (Stewart, 2016). An analysis of preservice teachers' critical thinking skills at the Faculty of Teacher Training and Education of Universitas Islam Balitar needs to be done to figure out whether these skills have been effectively empowered in learning (Sholihah & Sofiyana, 2022). The implications of this research can lead to the determination of appropriate learning strategies in empowering students' critical thinking skills.

## RESEARCH METHODS

This research method is descriptive quantitative with a survey to analyze the level of critical thinking skills of prospective teacher students at the Balitar Islamic University. This survey research was conducted from April to August 2020 at the Faculty of Teacher Training and Education (FKIP) of

Universitas Islam Balitar. The population in this study were all students enrolled in the FKIP who were still actively participating in lectures, namely the first through fourth year students. The sample consisted of 118 students from Biology Education, Pancasila and Civic Education, English Education, and Elementary School Teacher Education study programs.

The data on critical thinking skills were measured by using an essay test on general knowledge of health and the environment consisting of 5 items, which were developed based on the Illinois Critical Thinking Essay Test by Finken and Ennis. The test results were analyzed descriptively using the critical thinking assessment rubric developed by Zubaidah as shown in Table 1. The critical thinking indicators developed in the rubric include: focus, reasoning, organization, conventions, and integration.

**Table 1. The Critical Thinking Rubric, modified from Finken & Ennis.**

| Score/Point | Descriptor |
|---|---|
| 5 | All concepts are correct, clear, and specific<br>All answers are correct, clear, and specific, supported by true and strong reasons, as well as clear arguments<br>The flow of thought is good. All concepts are interrelated and integrated<br>The grammar is good and correct<br>All aspects are identifiable. The evidence is good and balanced |
| 4 | Most of the concepts are correct, clear, and specific<br>Most of the answers are correct and clear, yet less specific<br>The flow of thought is good. Most of the concepts are interrelated and integrated<br>The grammar is good and correct, yet a few mistakes are found<br>All aspects are identifiable, yet not balanced |
| 3 | A few concepts are correct and clear<br>A few answers are correct and clear, yet the reasons and arguments are unclear<br>The flow of thought is acceptable. A few concepts are interrelated and integrated<br>The grammar is acceptable, but there are mistakes in spelling<br>Most of the aspects seem correct |
| 2 | The concepts are lack of focus, excessive, or doubtful<br>The answers are poor<br>The flow of thought is poor. The concepts are not interrelated<br>Good grammar, incomplete sentences<br>A few aspects seem correct |
| 1 | All concepts are incorrect or insufficient<br>The reasons are unclear<br>The flow of thought is poor<br>The grammar is poor<br>The overall aspect is not sufficient |
| 0 | No answers or wrong answers |

The average score of critical thinking was then matched with critical thinking criteria. These criteria were the modification of the criteria developed by Finken and Ennis. The criteria for critical thinking skills are listed in Table 2.

**Table 2. The Criteria for Critical Thinking Skills (modified from Finken and Ennis)**

| Score | Criteria |
|---|---|
| 0-2.9 | Unidentifiable or still underdeveloped |
| 3.0–5 | Begin to develop or develop well |

## FINDING AND DISCUSSION

The data on critical thinking skills were obtained from the results of a critical thinking essay test, which consists of four questions. The questions are related to health and the environment. The results of the critical thinking test can be seen in Table 3.

**Table 3. The Average Score of Students' Critical Thinking Skills**

| Study Program | Semester 1 | Semester 3 | Semester 5 | Semester 7 | Average | Criteria |
|---|---|---|---|---|---|---|
| Biologi education | 2.8 | 2.6 | 3.3 | 2.7 | 2.85 | Unidentifiable or underdeveloped |
| Pancasila and civic education | 2.3 | 2.3 | 2.3 | 2.2 | 2.25 | Unidentifiable or underdeveloped |
| English education | 2.5 | 2.1 | 2.3 | 2 | 2.225 | Unidentifiable or underdeveloped |
| Elementary school teacher education | 2.3 | 2.1 | 2.2 | 1.9 | 2.125 | Unidentifiable or underdeveloped |
| Average | 2.5 | 2.3 | 2.5 | 2.2 | | Unidentifiable or underdeveloped |

Referring to the data in Table 3, it is known that the critical thinking skills of students from the four study programs, namely Biology Education, Pancasila and Civic Education, English Education, and Elementary School Teacher Education, remained in the unidentifiable or underdeveloped category. Of the four study programs, Biology Education had the highest average score of critical thinking skills, and Elementary School Teacher Education had the lowest average score. Visualization of the difference in critical thinking skill scores among study programs per semester.

In all study programs, the students' critical thinking skills remained in the unidentifiable or underdeveloped category. Critical thinking is a higher-order thinking skill that involves one's academic ability to interpret, analyze, evaluate, and infer information (Cakici, 2018). Meanwhile, metacognitive awareness is one's awareness of his/her thinking abilities. Critical thinking skills are closely related to cognitive skills (Budi & Ghofar, 2017; Çetin, 2017), that is, the students' ability to complete a task. This is certainly different from metacognitive awareness, which concerns student awareness of how a task must be completed (Alawiyah et al., 2019).

Critical thinking skills are one of the 21st century skills that must be possessed by students (Boholano, 2017; Coskun, 2018). In this study, the critical thinking skills of preservice teachers at FKIP UNISBA, which remained underdeveloped, need to be empowered. Empowerment of critical thinking skills is crucial since it can develop attitudes and perceptions that support the creation of positive classroom

conditions (Astuti et al., 2019; Lukitasari et al., 2019; Maryuningsih et al., 2019); acquire and integrate abilities; broaden horizons; actualize the meaning of knowledge; and develop favorable thinking behaviors. Such empowerment can be done through learning activities. Lecturers can apply certain learning strategies or models to train students' critical thinking skills, such as problem-based learning (Choi et al., 2014; Lukitasari et al., 2019), project-based learning (Muhibbudin et al., 2020), inquiry learning (Sandika & Fitrihidajati, 2018; Tindangen, 2018), cooperative learning (Chatila & Husseiny, 2017), RADEC learning model (Pratama et al., 2019) and other innovative models.

## CONCLUSION

Based on the data analysis and discussion of findings, the critical thinking skills of preservice teachers at FKIP UNISBA are known to be underdeveloped, and thus need empowerment. Lecturers must empower students' critical thinking skills through learning activities. This research would be better if it was equipped with an analysis of metacognitive skills and learning outcomes of the students to obtain more comprehensive data regarding metacognitive, critical thinking skills, and academic achievement.

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