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PROFILE OF CRITICAL THINKING TENDENCY STUDENTS OF THE CHEMISTRY AND NATURAL SCIENCES EDUCATION STUDY PROGRAM INSTITUT STUDI ISLAM SUNAN DOE

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ABSTRACT

The tendency to think critically is one of the essential competencies to be mapped from an early age, this student's competence must be analyzed for its development and must constantly be developed because students very much need it to be able to compete in the 21st century later. This study aims to look at the profile of the level of critical thinking tendencies of students of science study programs, namely Chemistry Education and Natural Science at the Institut Studi Islam Sunan Doe. This research was conducted using descriptive and quantitative approaches to see the profile of students' critical thinking tendencies at the Institut Studi Islam Sunan Doe. The research subjects were students of the third semester of the Chemistry and Science Tadris study programs. Data were collected based on the Critical Thinking Tendency test results using a questionnaire adapted from the CCDTI (California Critical Thinking Disposition Inventory). The results of this study indicate that 1) The profile of critical thinking tendencies in chemistry and natural science education students has an average of above 50% in the positive category, which generally means quite good. 2) The indicator of the highest critical thinking tendency in chemistry education students is the Inquisitiveness indicator (curiosity). 3) The indicator of the highest critical thinking tendency for Tadris IPA students is the Truth-seeking indicator.

Keywords: Critical Thinking, Students, CCDTI.

INTRODUCTION

The tendency to think critically is significant for students during learning time. This aspect of the movement of students' critical thinking is one of the intellectual capitals that students in 21st-century learning must possess. Students who tend to think critically are very likely to increase their essential thinking competence to increase mastery of learning concepts.

Critical thinking ability is reasoning that is done reflexively or suddenly, critically, creatively, and oriented to the thought process that will result in the formation of a concept, as well as an analysis. The process is generated from a mindset based on observation, experience, reflection, action, and communication (Chaffee, 2014). The consensus of experts using The Delphi Research Method has published a unified perception of critical thinking. They divide critical thinking into two components by implication: cognitive skills and dispositions, cognitive skills, and tendencies. Cognitive skills are a profound component, which is the core of critical thinking, translated into interpretation, analysis, evaluation, inference, explanation, and self-regulation (Dökmecioğlu et al., 2020).

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The tendency to think critically (positioned) is described as a critical spirit or tendency to think critically, which has the characteristics of deep curiosity, sharpness of thinking, perseverance in developing reason, and the need for reliable information (Marabini, 2022).

Achieving qualifications from the tertiary level requires an increase in the thinking ability of students. The tendency to think critically in this study is a tendency, according to Facione, which contains indicators: truth-seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness (curiosity-know), maturity is measured through a critical thinking tendency questionnaire developed (Fikriyati et al., 2022). Students' internal efforts and external supporting facilities in the form of curriculum, teaching and learning environment, and lecturers, are needed in building critical thinking skills (Riyanto et al., 2020). Each component has a role in building and improving students' necessary thinking skills. To consider making policies related to improving the quality of student education, universities need data on the profile of students' critical thinking tendencies. In this case, a study has been carried out to explain the shape of essential thinking preferences of chemistry and natural science education students at the Institut Studi Islam Sunan Doe. The results of this study are expected to be used by teachers to see the internal motivation in students to think critically so that teachers can use learning methods that can hone students' tendencies to think critically, which will be expected to train students' critical thinking skills indirectly.

LITERATURE REVIEW

Critical thinking is an attitude of wanting to think deeply about problems and things that are within the range of one's experience. Critical thinking demands a great effort to examine every belief or assumptive knowledge based on the supporting evidence and the further conclusions that result from it (Gunawardena & Wilson, 2021). Critical thinking is reasonable and reflective thinking that focuses on deciding what to believe or do. (Sudarmo, 2021).

Critical thinking has been defined in a variety of ways, but most definitions include a person's ability, and propensity, to make and make judgments about evidence-based conclusions (Dombrowski et al., 2021).

Critical thinking is an approach with the latest problems, questions, and concerns. Critical thinking consists of two types, namely critical thinking skills and critical thinking tendencies. The tendency to think critically is to think critically about something or someone's perspective on the problem at hand (Facione, 2011; Paul, 2018). Tendency is a thought to evaluate and argue other opinions by seeking and finding the truth and thinking from a different way of logic. Analytical thinking Tendency is the tendency to consider opinions through logic and reason (Wahyuni et al., 2019). Empathic thinking tendency is the tendency to recognize and share the feelings of others. Pluralistic thinking The tendency is the tendency to seek diverse points of view or conceptual positions (Straková & Cimermanová, 2018).

Carrying out activities in solving a problem to produce critical thinking, of course, cannot be separated from the encouragement in students, one of which is the tendency of students to think critically. The difference in curiosity, the ability to think openly, analyze systematically, be confident in solving a problem, to the maturity of students in making a decision will make a difference in the learning process in solving a problem so that it will also affect students' critical thinking skills. Meanwhile, one of the internal factors that can encourage students' critical thinking skills is the tendency to think critically which is innate from each student.

METHODS

This research was conducted using descriptive and quantitative approaches to see the profile of students' critical thinking tendencies at the Institut Studi Islam Sunan Doe. The critical thinking tendency test is used as an alternative instrument to measure students' critical thinking tendencies score objectively and in more detail so that researchers can see the ability of students' basic movements of thinking.

The population of this study was students of chemistry and natural science education in semester 3 of the Institut Studi Islam Sunan Doe. Data on critical thinking tendencies were collected using The California Critical Thinking Disposition Inventory (CCTDI) test developed by Facione, (2011). This test has been translated into Indonesian by Lestari et al., (2016) 75 items Objective test with alternative answers strongly agree, agree, somewhat agree, slightly disagree, disagree, and strongly disagree. The distribution of indicators that appear in the statement is presented in Table 1.

Table 1 Distribution of Indicators in Statements

Indicators	Statements Item Number	Total
Truth-seeking	12, 19, 23, 31, 39, 43, 49, 57,61, 62,71, 75	12
Open-mindedness	5, 7, 8, 14, 20, 24, 28, 30, 35, 45, 64, 73	12
Analyticity	6, 13, 21, 38, 42, 50, 54, 60, 66, 67, 70	11
Systematicity	3, 4, 9, 22, 25, 26, 29, 33, 58, 63, 74	11
Self Confidence	10, 16, 27, 36, 40, 48, 52, 56 , 69	9
Inquisitiveness	2, 15, 18, 34, 44, 47, 51, 55, 59, 65	10
Maturity of judgement	1, 11, 17, 32, 37, 41, 46, 53, 68,72	10
Total number		75

The critical thinking tendency questionnaire uses a 6-point Likert scale response format ranging from strongly agree to disagree. The critical thinking tendency questionnaire contains seven indicators and each end, each with one of 10 and a maximum of 60. The total score for all hands ranges between 70 and 420 (Facione, 2011). The provisions for interpreting the scores obtained are described in Table 2.

Table 2. Score Interpretations Terms

Each Indicator	Total Score	Characteristics of KcBK
50 - 60	350 - 420	Strong
49 - 40	344 - 280	Positive
30 – 39	211 – 279	Ambivalence
≤ 30	≤ 210	Negative

Sumber : Giancarlo & Facione (Tiwary, 2003)

RESULTS AND DISCUSSION

Profile of Critical Thinking Tendency in Chemistry Education Department

The research data shows that, in general, the level of critical thinking tendency of Chemistry Education students is quite good because as many as 55.5% of students have a positive category of essential thinking ability. While about 22.2% for the firm and ambivalent category. In detail, the profile distribution of the level of critical thinking tendencies is presented in Table 3 below.

Table 3 Frequency Distribution of Chemistry Education Study Program Students at Several Levels of Critical Thinking Tendency

Category	Frequency (%)
Strong	22.2
Positif	55.5
Ambivalen	22.2
Negatif	00

A review of students' ability in the chemical education study program based on indicators of critical thinking tendencies shows that the highest average score is obtained on Inquisitiveness (curiosity). The results of the analysis of each hand can be seen in Table 4 below:

Table 4 Data on Assessment Result Indicators of Critical Thinking Tendency Test Students of Chemistry Education Study Program

Observed Indicators	Percentage (%)
Truth-seeking	14,11%
Open-mindedness	13,73%
Analyticity	14,58%
Systematicity	14,36%
Self Confidence	14,47%

Inquisitiveness	16,11%
Maturity of judgement	12,66%

The results of this study indicate that, in general, students of the chemical education study program have an intense curiosity about a situation. Curiosity resulting from new learning can stimulate students' ability to think and analyze the learning. Students with high curiosity tend to be able to accept or reject something by providing reasons or evidence that justifies them in accepting or rejecting something they are facing.

Based on the research results, it is hoped that it will become a concern for the entire academic community of the Institut Studi Islam Sunan Doe, especially lecturers in the Chemistry Education study program. The existing findings can be considered in planning and implementing the chemistry learning process to hone students' critical thinking tendencies, which will later impact the process of students' ability to think critically.

Profile of Critical Thinking Tendency of Natural Science (NS) Education Students

The results showed that students of the natural science education study program also had a relatively good level of critical thinking tendencies. As many as 50% of students think critically in the positive category. In detail, the distribution of the profile of the level of critical thinking tendencies is presented in Table 5 below.

Table 5 Frequency Distribution of Natural Science Education Study Program Students at Several Levels of Critical Thinking Tendency

Category	Frequency (%)
Strong	12.5
Positif	50
Ambivalen	37.5
Negatif	00

The level of critical thinking tendency of students in the natural science education study program in the strong category is still minimal. This can be caused by several factors, such as the basis of the social environment and the relationship between various environmental components (Ramadhan et al., 2019; Spector & Ma, 2019; Wiradinata et al., 2021). Spector & Ma, (2019) states that the lack of critical thinking disposition is due to a lack of experience both in terms of knowledge and practice, and they still tend to have a fear of asking questions, are awkward exploring their knowledge, do not dare to try, investigate, analyze, organizing, and not sure what decisions are good to make. A review of student's ability in the natural sciences education program based on indicators of critical thinking tendencies shows that the highest average score is obtained on the Truth-seeking indicator. This can be seen from the results of the analysis based in Table 6 below:

Table 6 Data on Assessment Results of Critical Thinking Tendency Test Indicators for students of natural science (NS) education study programs

Observed Indicators	Percentage (%)
Truth-seeking	15,11%
Open-mindedness	13,53%
Analyticity	14,78%
Systematicity	14,31%
Self Confidence	14,47%
Inquisitiveness	14,16%
Maturity of judgement	13,66%

Based on the observations above, it can be indicated that students of the natural science education study program can find a justification for their opinion and accept or reject something. So that lecturers can provide learning models such as inquiry that can hone students' skills in solving problems with various correct solutions. With learning that encourages critical thinking, students can channel their abilities by exploring on their own, and this affects the tendency of students' attitudes to think critically.

CONCLUSION

Based on the results of the analysis of research data and discussions that have been described, some of the conclusions obtained are described as follows: (1) The profile of the tendency of critical thinking in students of the chemical education and science education study program has an average of above 50% in the positive category which generally means good enough. (2) The indicator of the highest

critical thinking tendency among students of the chemical education study program is the indicator of Inquisitiveness (curiosity). (3) The indicator of the highest critical thinking tendency among students of the chemical education study program is the indicator of Inquisitiveness (curiosity). (4) Lecturers as components of the education system are very much needed to facilitate the development of students' critical thinking tendencies, so continuous efforts must be made to develop these competencies.

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