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Exploring PAI Students' Critical Thinking Competencies for Seizing Society 5.0 Era Opportunities Using Mixed-Methods Study

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Abstract: Critical thinking is a key competency for navigating the Society 5.0 era. In reality, the critical thinking abilities of Islamic Education students still vary across various aspects. This study aims to explore the level of critical thinking, identify development efforts, and analyze the obstacles encountered. The study employed a mixed-methods approach with a sequential explanatory design. Quantitative data were collected through a questionnaire administered to 105 sixth-semester students and analyzed using descriptive statistics. Qualitative data were gathered through in-depth interviews and documentation, then analyzed through the stages of data collection, data reduction, data display, and conclusion and verification. The results indicate that students' critical thinking skills fall into the high category at 82.24%. All aspects of critical thinking achieved high levels. Development efforts include the application of critical thinking in learning, the use of student-centered models and strategies, the utilization of learning technology, and HOTS-based assessment. The challenges identified included differences in students' initial abilities, time constraints, a learning approach that remains rote-memorization-oriented, low self-confidence, limited facilities and infrastructure, and a lack of training for instructors. The study concluded that PAI students' critical thinking skills are generally good but still vary and require further development. Unlike previous studies that measured these skills through experimental treatments, this study did not examine the factors causing such variations. These findings should be taken into consideration by faculty members and the department to improve the quality of instruction so that students' critical thinking skills can develop more optimally.

Abstrak: *Berpikir kritis merupakan kompetensi utama untuk menghadapi era Society 5.0. Realitasnya, kemampuan berpikir kritis mahasiswa PAI masih bervariasi dari berbagai aspek. Penelitian ini bertujuan mengeksplorasi tingkat berpikir kritis, mengidentifikasi upaya pengembangan, serta menganalisis kendala yang dihadapi. Penelitian menggunakan metode campuran mixed methods dengan desain sequential explanatory. Data kuantitatif diperoleh melalui angket 105 mahasiswa semester VI dan dianalisis menggunakan statistik deskriptif. Data kualitatif melalui wawancara mendalam dan dokumentasi, lalu*

dianalisis dengan tahapan data collection, data reduction, data display, serta conclusion and verification. Hasil penelitian menunjukkan kemampuan berpikir kritis mahasiswa berada pada kategori tinggi sebesar 82,24%. Seluruh aspek berpikir kritis, mencapai capaian tinggi. Upaya pengembangan melalui penerapan berpikir kritis dalam pembelajaran, penggunaan model dan strategi berpusat pada mahasiswa, pemanfaatan teknologi pembelajaran, serta asesmen berbasis HOTS. Kendala yang ditemukan antara lain perbedaan kemampuan awal mahasiswa, keterbatasan waktu, pembelajaran yang masih berorientasi hafalan, rendahnya kepercayaan diri, keterbatasan sarana prasarana, dan minimnya pelatihan dosen. Penelitian menyimpulkan bahwa kemampuan berpikir kritis mahasiswa PAI tergolong baik namun masih bervariasi dan perlu pengembangan. Berbeda dengan penelitian sebelumnya yang mengukur kemampuan melalui perlakuan, penelitian ini belum mengkaji faktor penyebab variasi tersebut. Temuan ini menjadi pertimbangan bagi dosen dan prodi untuk meningkatkan kualitas perkuliahan agar kemampuan berpikir kritis mahasiswa berkembang lebih optimal.

***Keywords**: critical thinking skills, Islamic Education students, Society 5.0, higher education, mixed methods.*

INTRODUCTION

The 5.0 Society era is an era that integrates advanced technology with everyday life to achieve social welfare and sustainable innovation. This era marks humanity's entry into the 21st century. In this era, the world is facing upheavals caused by climate change, artificial intelligence, revolution, and advances in human technology. (Int et al., 2024). Technological developments have penetrated various aspects of human life, including education. (With & Sites, 2024). This era of society has a myriad of opportunities, as well as challenges. Among the opportunities of this era are: First, facilitating access to the development of personal potential and competence. Second, opening up new job opportunities. Third, accelerating the development of Islamic educational institutions. Fourth, the need for the spiritual dimension of human beings. Fifth, a tendency toward greater openness and rationality (Idris, 2022). According to Ali Usman et al., the opportunities of the Society 5.0 era are the development of 21st-century skills, which consist of 48 Opportunities and Challenges in Education in the Era of Industry 4.0 and Society 5.0: critical thinking, creativity, and collaboration; as well as the use of online learning platforms to reach more individuals (Agustina, 2019). This opportunity should not be missed by anyone, including students as agents of change, as it can help students develop their full potential. The World Economic Forum in 2020 released a research report stating that several skills are considered essential in the Society 5.0 era, including the ability to: solve complex problems, think critically, be creative, manage others, coordinate, demonstrate emotional intelligence, make decisions, serve, negotiate, and think flexibly. (Saputra, 2024).

Critical thinking is a core competency for students in facing today's challenges (Novi Indah Lestari, 2025) and is the highest level of the thinking process. Critical thinking aims to demonstrate that a person can understand what is happening and find solutions (Rahayu, 2024). According to Ruggiero (2012). In Marlina (2020), Critical thinking is the highest level of thinking, according to Ruggiero. These levels of thinking are broadly divided into three categories, namely reflective thinking, creative thinking, and critical

thinking. The essence of critical thinking is to examine decisions and arguments to determine the level of usefulness and truth of something (Marlina, 2020). According to Wagner, in recent years, critical thinking has become a key indicator of success in education and in the workplace (Winarti & Waluya, 2018). Critical thinking should be mastered by students so that they can keep up with developments in science and technology, which are advancing at an increasingly rapid pace. This rapid development has resulted in easy access to both positive and negative information. Therefore, critical thinking is a skill that students must possess (Herlina et al., 2022).

Critical thinking must be nurtured and empowered at all levels of education, including higher education. Education, learning, and teaching play an important role in developing critical thinking skills (Jabali et al., 2024). In higher education, the aim is to provide programs based on Indonesian culture, in the form of diplomas, bachelor's degrees, master's degrees, doctorates, professional degrees, and specialist degrees (*UU. No. 12 Tahun 2012, Pasal 1 Poin Ke-2*, n.d.).

Higher education institutions have an important role to: (a) develop capabilities and realize a dignified national character and civilization to educate the community, (b) create an academic community that is highly creative, innovative, competitive, skilled, and cooperative through the implementation of the three pillars of higher education, (c) developing science and technology with strong attention and application of human values (*UU. No. 12 Tahun 2012, Pasal 4*, n.d.).

Based on the mandate of Law No. 12 of 2012 concerning Higher Education, Kumar & James (2015) state that educational institutions must focus their attention on and improve critical thinking skills (Kumar.R & James, 2015). A study conducted by Zhang (2003) and referenced by Marlina found that students must possess nine critical skills, namely a high level of curiosity, the ability to receive and process information, flexibility, honesty, fairness, wisdom in making decisions, and focus when facing and finding solutions to problems. Therefore, universities must be able to produce students who can see, know, realize, and feel the real conditions that occur in the community when facing social crises (Marlina, 2020). This means that higher education can produce creative students in research (Yu et al., 2025). Creative students tend to demonstrate more profound critical thinking skills.

According to Ennis, there are 12 indicators of critical thinking skills, summarized into 5 stages, namely: 1) Basic clarification skills, which include formulating questions, analyzing arguments, and asking and answering questions; 2) The ability to provide the basis for a decision, such as: assessing the credibility of information sources, conducting observations, and evaluating observation reports; 3) The ability to draw inferences, such as: making and evaluating deductions, making and evaluating inductions, and evaluating; 4) Ability in advanced clarification, such as: defining and evaluating definitions, identifying assumptions, and 5) Ability in supposition and integration, such as: making assumptions and integrating (Ennis S, 2015).

Critical thinking skills are essential for Islamic Education students; not only do they serve as a tool for analyzing various situations in life, but they also help deepen religious faith and ensure that religious understanding is not merely doctrinal or rote memorization, but is also contextual, rational, and relevant to contemporary life, since the goal of Islamic education is to produce students who succeed in this world and in the hereafter (Amrullah, Mustofa & Fuhaidah, 2022). To that end, the Islamic Education program must ensure that students' critical thinking skills develop effectively.

Based on observations, students' critical thinking skills still vary; some are already capable of engaging in deep critical thinking by analyzing course material in relation to real-life situations and identifying solutions to specific problems. However, others are still learning to formulate strategies and solutions for the topics they are studying. This indicates a diversity in students' levels of critical thinking within the learning process.

Research on critical thinking has been conducted extensively by previous researchers, including Siti Munawaroh, who researched "Exploring Students' Critical Thinking in Collaborative Problem Solving Activities in the Application of Sequences and Series." This study aims to explore students' critical thinking in collaborative problem-solving activities (Munawaroh & Siswono, 2021). Ewi Mellysa Barus researched "The Level of Critical Thinking Skills of Pharmacy Students in Cell Biology Teaching Materials." This study only looked at the level of thinking skills in one subject. (Mellysa Barus, 2020). Hapni Laila Siregar researched "Analysis of the Development of Students' Critical Thinking Skills in PAI Courses." This research examined efforts to develop critical thinking skills in learning conducted by lecturers (Laila Siregar, 2024). Rina Marlina, whose research is titled "Improving Students' Critical Thinking Skills Through Learning Experiences in Student Organizations." Her research results show that student organizations have a positive contribution to improving students' critical thinking skills. (Marlina, 2020). Karolina, 2018, his research is titled "*The Implementation of Brain-Based Learning to Improve Students' Critical Thinking Ability in Islamic Education Philosophy Course in PAI Study Program STAIN Curup.* This study discusses how the use of Brain-Based Learning (BBL) can improve students' critical thinking in philosophy of education courses.

Finally, Endang Retno Winarti et al., with the title "Improving Critical Thinking Skills Through Problem-Based Learning with Peer Feedback Activity." The results of the study show an increase in critical thinking skills and attitudes in the application of the PBL model with Peer Feedback Activity in online discussion forums (Winarti & Waluya, 2018). Nanang Priatna, dkk., researching about "STEM education at junior high school mathematics course for improving the mathematical critical thinking skills", his research on the development of project-based teaching materials that combine mathematics topics with other STEM fields (Priatna et al., 2020).

However, there has been no literature review focusing on mapping the level of critical thinking skills of PAI students in facing the opportunities of the Society 5.0 era. Therefore, this study attempts to map the level of critical thinking skills of PAI students in the lecture process, and what efforts are made to develop these critical thinking skills, so that PAI students can face the opportunities that exist in the Society 5.0 era, and what obstacles are encountered in developing these skills. Through research entitled "Exploring the Critical Thinking Skills of PAI IAIN Curup Students in Facing the Opportunities of the Society 5.0 Era," this study attempts to answer all of these questions.

METHOD

This study uses a combination of research methods or mixed methods. According to Aramo-Immonen in Faisal Hakim Nasution et al., combination research is an approach that combines quantitative and qualitative forms in a single research series (Hakim Nasution et al., 2024). The research design uses a sequential explanatory design, which combines quantitative and qualitative methods in sequence. The first stage of the research is conducted using quantitative methods, and the second stage uses qualitative methods (Hakim Nasution et al., 2024). In qualitative research, a phenomenological approach is used.

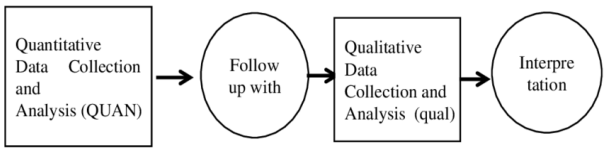

Image 1
Desain Penelitian *sequential explanatory*

In the first phase, quantitative data was collected and analyzed through the distribution of questionnaires to students to obtain an overview of their critical thinking skills. The results of the quantitative analysis were then used as the basis for the qualitative phase, which involved in-depth interviews with the program chair, faculty members, and students. The qualitative phase aimed to deepen understanding of efforts to develop critical thinking skills as well as the obstacles faced in their development. The integration of both data sets was carried out during the research results interpretation phase, resulting in a more comprehensive understanding of students' critical thinking skills in addressing the opportunities of the Society 5.0 era.

Quantitative data were analyzed using descriptive statistics, including minimum, maximum, mean, standard deviation, and frequency distribution. In addition, critical thinking ability scores were converted into percentages to determine the level of students' critical thinking ability in each aspect measured.

The research instrument was developed based on Ennis's critical thinking ability indicators, which consist of five aspects: elementary clarification, basic support, inference, advanced clarification, and strategies and tactics.

The population in this study consisted of 147 sixth-semester students. Qualitative data were obtained from lecturers teaching the course and the head of the Islamic Education Study Program as primary data, while secondary data sources came from relevant reference books, articles in research journals, and documentation related to the study. There were two data collection techniques used in this study. Quantitative data were collected through a questionnaire. The questionnaire was distributed to respondents via Google Form using a Likert scale (1-5). Of the total population, only 105 people completed the questionnaire.

Table: 1
Number of Respondents Based on Location

Lokal	Jumlah
VI A	13
VI B	18
VI C	19
VI D	18
VI E	18
VI F	19

Before the questionnaire was distributed to research respondents, the statement items were tested outside of the respondents and then tested for validity and reliability using SPSS 30. Pearson Product-Moment Correlation was used to analyze the validity of the items, and Cronbach's Alpha Coefficient was used to determine the reliability of the items. If the correlation value is above the r table value with a significance level of 5%, the instrument is declared valid, and if the Alpha value is ≥ 0.7, the instrument is declared reliable (Limberg et al., 2021).

Table: 2
Validation Test Results

No	Critical Thinking			No	Critical Thinking		
	r critical/ table	r Observed/ hitung	Kriteria		r critical/ table	r Observed/ hitung	Criteria
1	0.433	0.549	VALID	26	0.433	0.611	VALID
2	0.433	0.642	VALID	27	0.433	0.541	VALID
3	0.433	0.647	VALID	28	0.433	0.611	VALID
4	0.433	0.833	VALID	29	0.433	0.498	VALID
5	0.433	0.587	VALID	30	0.433	0.896	VALID
6	0.433	0.603	VALID	31	0.433	0.832	VALID
7	0.433	0.55	VALID	32	0.433	0.821	VALID
8	0.433	0.503	VALID	33	0.433	0.608	VALID
9	0.433	0.626	VALID	34	0.433	0.647	VALID
10	0.433	0.176	IN VALID	35	0.433	0.743	VALID
11	0.433	0.478	VALID	36	0.433	0.68	VALID
12	0.433	0.665	VALID	37	0.433	0.66	VALID
13	0.433	0.407	IN VALID	38	0.433	0.797	VALID
14	0.433	0.602	VALID	39	0.433	0.718	VALID
15	0.433	0.385	IN VALID	40	0.433	0.699	VALID

16	0.433	0.586	VALID	41	0.433	0.77	VALID
17	0.433	0.466	VALID	42	0.433	0.689	VALID
18	0.433	0.647	VALID	43	0.433	0.617	VALID
19	0.433	0.773	VALID	44	0.433	0.291	IN VALID
20	0.433	0.691	VALID	45	0.433	0.487	VALID
21	0.433	0.705	VALID	46	0.433	0.491	VALID
22	0.433	0.495	VALID	47	0.433	0.644	VALID
23	0.433	0.703	VALID	48	0.433	0.846	VALID
24	0.433	0.147	IN VALID	49	0.433	0.767	VALID
25	0.433	0.642	VALID	50	0.433	0.698	VALID

After conducting a validation test, a reliability test was carried out using the Cronbach Alpha formula to determine the extent to which the measurement results were relatively consistent so that the instrument could be used repeatedly if the value was ≥ 0.70. The results of the test were obtained using SPSS 30 and are shown in the table below:

Table 3.
Reliability Test Results

Variabel	Cronbach Alpha	Criteria
Critical Thinking	0.920	Reliable

Based on the questionnaire trial, it was found that there were several invalid items, so the invalid questions were removed and the questionnaire was distributed for further activities. Meanwhile, qualitative data was collected through documentation and in-depth interviews. These in-depth interviews were conducted to obtain detailed information about efforts to develop students' critical thinking skills and the obstacles faced in developing students' critical thinking skills in taking advantage of the opportunities of the Society 5.0 era. Quantitative data analysis techniques used descriptive statistics, while qualitative data analysis used the Miles and Huberman model theory.

The respondents for the interview data were Islamic Education (PAI) lecturers who teach PAI-related courses; they were selected using purposive sampling. Meanwhile, student respondents were selected using snowball sampling, and the data were considered saturated after 9 respondents.

The qualitative data analysis technique used was the Miles and Huberman model, namely data collection, data reduction, data display, and conclusion and verification (Sugiono, 2005).

RESULTS AND DISCUSSION

Based on the results of the study, the following can be presented:

1. The Level of Critical Thinking Skills of PAI IAIN Curup Students in Facing Opportunities in the Society 5.0 Era

   Critical thinking is a skill that today's students must possess. Ennis suggests that there are 12 indicators of critical thinking skills, which are summarized in 5 stages, namely: 1) Basic clarification; formulating questions, analyzing arguments, and asking and answering questions; 2) Providing reasons for a decision; assessing the credibility of information sources, conducting observations, and evaluating observation reports. 3) Inference: making and assessing deductions, making and assessing inductions, and evaluating. 4) Advanced clarification: defining and assessing definitions, identifying assumptions. 5) Supposition and integration; supposing and integrating (Ennis S, 2015).

   Based on the results of a questionnaire distributed via Google Forms, data on students' critical thinking skills were obtained, followed by statistical analysis and descriptive statistical testing. This analysis is the first step in the data processing process, which aims to describe the basic characteristics of the collected data. This analysis presents a summary of information through statistical measures such as mean, median, mode, standard deviation, variance, minimum, and maximum values. The main purpose of this analysis is to provide a comprehensive

representation of the distribution pattern, central tendency, and data distribution observed before proceeding to the inferential analysis stage (Marvic Sciberras dan Alexiei Dingli, 2023). Through descriptive statistics, researchers can gain an initial understanding of the existing data conditions, identify the potential existence of extreme values (outliers), and evaluate the suitability of the data against the necessary statistical assumptions (Anthony Velec and Bing Huang, 2014). This information serves as an important basis for determining the subsequent analytical approach, including the selection of the most appropriate statistical method for testing the research hypothesis.

Table 4.
Uji Statistik Deskriptif

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Kritical Thinking Mahasiswa	105	180.00	45.00	225.00	186.9619	3.42652	35.11134	1232.806
Valid N (listwise)	105							

Descriptive statistics describe the critical thinking abilities of students with an average (mean) of 186.96, a median of 193, and a mode of 180. This shows that the majority of students have scores within this range. The data is quite widely distributed, with a standard deviation of 35.11 and a variance of 1232.80. This shows that there is diversity in the level of critical thinking among students. The following is the distribution of student critical thinking data:

Table: 5
Students' Critical Thinking Skills Level

Studens' Critical Thinking		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	45.00	3	2.9	2.9	2.9
	105.00	1	1.0	1.0	3.8
	135.00	2	1.9	1.9	5.7
	136.00	1	1.0	1.0	6.7
	137.00	1	1.0	1.0	7.6
	143.00	1	1.0	1.0	8.6
	145.00	1	1.0	1.0	9.5
	147.00	1	1.0	1.0	10.5
	149.00	1	1.0	1.0	11.4
	150.00	1	1.0	1.0	12.4
	151.00	1	1.0	1.0	13.3
	154.00	1	1.0	1.0	14.3
	159.00	1	1.0	1.0	15.2
	161.00	1	1.0	1.0	16.2
	163.00	1	1.0	1.0	17.1
	164.00	1	1.0	1.0	18.1
	172.00	2	1.9	1.9	20.0
	173.00	3	2.9	2.9	22.9
	175.00	1	1.0	1.0	23.8
	177.00	3	2.9	2.9	26.7
	178.00	1	1.0	1.0	27.6
	179.00	1	1.0	1.0	28.6
	180.00	7	6.7	6.7	35.2
	182.00	2	1.9	1.9	37.1
	183.00	2	1.9	1.9	39.0
	184.00	1	1.0	1.0	40.0
	185.00	1	1.0	1.0	41.0
	186.00	1	1.0	1.0	41.9
	188.00	1	1.0	1.0	42.9
	189.00	1	1.0	1.0	43.8
	190.00	2	1.9	1.9	45.7
	191.00	3	2.9	2.9	48.6
	192.00	1	1.0	1.0	49.5
	193.00	3	2.9	2.9	52.4
	194.00	2	1.9	1.9	54.3
	197.00	1	1.0	1.0	55.2
	198.00	1	1.0	1.0	56.2
	199.00	1	1.0	1.0	57.1
	200.00	2	1.9	1.9	59.0
	201.00	1	1.0	1.0	60.0
	202.00	6	5.7	5.7	65.7
	203.00	1	1.0	1.0	66.7
	205.00	1	1.0	1.0	67.6
	208.00	3	2.9	2.9	70.5
	209.00	1	1.0	1.0	71.4
	210.00	2	1.9	1.9	73.3
	212.00	3	2.9	2.9	76.2
	213.00	1	1.0	1.0	77.1
	214.00	2	1.9	1.9	79.0
	215.00	2	1.9	1.9	81.0
	216.00	2	1.9	1.9	82.9
	217.00	2	1.9	1.9	84.8
	218.00	1	1.0	1.0	85.7
	220.00	1	1.0	1.0	86.7
	221.00	3	2.9	2.9	89.5
	222.00	4	3.8	3.8	93.3
	223.00	1	1.0	1.0	94.3
	224.00	1	1.0	1.0	95.2
	225.00	5	4.8	4.8	100.0
	Total	105	100.0	100.0	

Based on the results of a frequency distribution analysis of 105 students in the

Islamic Religious Education (IRE) program, it was found that there is diversity in students' critical thinking abilities. Students' critical thinking ability scores ranged from 45 to 225, indicating differences in critical thinking ability among the respondents. Although there was variation in scores, in general, students' critical thinking ability tended to fall into the high category. This is evident from the dominance of students who scored in the range of 180 to 225. The most common score obtained by students was 180, with a frequency of 7 respondents (6.7%), followed by a score of 202 with 6 respondents (5.7%), and a score of 225 with 5 respondents (4.8%). These findings indicate that the majority of students have demonstrated good critical thinking skills in the learning process.

The concentration of scores in the high-scoring group indicates that most students can comprehend information in depth, analyze problems, evaluate alternative solutions, and make decisions based on logical reasoning. This suggests that students have the intellectual foundation needed to meet the challenges of learning and societal development in the Society 5.0 era, which requires higher-order thinking skills.

On the other hand, there were still a number of students who scored low, such as 45, 105, and 135. Although their number was relatively small compared to the total number of respondents, this finding indicates that students' critical thinking skills have not developed uniformly. These differences in ability may be influenced by various factors, such as academic background, learning motivation, experience in problem-solving, and the level of student engagement in learning activities that foster critical thinking skills.

Overall, the data distribution indicates that the critical thinking skills of students in the Islamic Education Study Program tend to be concentrated in the high-score group. This finding suggests that most students already possess good critical thinking skills, although various development efforts are still needed to ensure that these skills improve more optimally and evenly across all students. Furthermore, to obtain a more comprehensive picture, the analysis of critical thinking skills needs to be reviewed based on each aspect measured in this study.

The following table shows the level of students' critical thinking skills based on aspects.

Table 6
Levels of Critical Thinking Skills Among Students by Aspect

Aspect	Presentage (%)	Category
Elementary Clarification	82,11	Tall
Basic Support	82,89	Tall
Inference	82,11	Tall
Advanced Clarification	82,21	Tall
Strategies and Tactics	81,90	Tall
Rata-rata	**82,24**	Tall

The table above shows that all aspects fall into the high category with relatively even percentages. The Basic Support aspect received the highest percentage at 82.89%. These results indicate that students have developed strong abilities to assess the credibility of information sources and to use observational findings as a basis for forming opinions and making decisions. These skills form a crucial foundation for critical thinking, as they enable students to avoid accepting information at face value without first conducting a thorough analysis.

The Advanced Clarification aspect ranks next with a percentage of 82.21%. This achievement indicates that students have been able to explain a concept in greater depth, identify the terms used, and consider the various assumptions underlying a problem. This ability indicates that students not only

understand information at a superficial level but also strive to analyze the meaning contained within it.

Meanwhile, the aspects of Elementary Clarification and Inference received the same percentage, namely 82.11%. These findings indicate that students have been able to focus their questions, analyze the information received, and draw conclusions based on logical reasoning. This ability is important because it forms the foundation of the reasoning process before students make decisions or present an argument.

Among all the aspects measured, the Strategies and Tactics aspect received the lowest percentage, at 81.90%, although it still falls within the high category. These results indicate that students' ability to determine actions, choose appropriate strategies, and formulate problem-solving steps still requires strengthening. This situation is understandable because the ability to formulate strategies and make decisions generally requires experience, practice, and more intensive engagement in real-world problem-solving situations.

Overall, students' average critical thinking skills reached 82.24% and fell into the high category. These findings indicate that students in the Islamic Education Program already possess strong critical thinking skills across the various aspects measured. Nevertheless, the development of critical thinking skills must continue on an ongoing basis so that each aspect can develop more optimally and in a balanced manner, particularly those related to strategy and decision-making.

The head of the Islamic Religious Education program also noted that:

> "The critical thinking skills of Islamic Religious Education students are already strong, particularly when it comes to analyzing religious and social issues. However, there is still room for improvement in terms of determining strategies and actions, as well as formulating solutions to a given topic."."(Ketua Prodi PAI, n.d.).

A similar sentiment was expressed by the Islamic Education lecturer:

> "The critical thinking skills of PAI students have improved, but not uniformly. Some students are able to analyze religious issues effectively, but others still need to improve their ability to develop strategies related to the learning process."(KI Dosen PAI, 20 Agustus 2025).

Based on the results of statistical data and interviews conducted, it can be concluded that the critical thinking skills of students in the Islamic Education Study Program are at a high level. However, there is still a need for the Islamic Education Study Program and its faculty to further develop students' ability to determine strategies and solve problems. Therefore, the second section will explain the efforts made by the Islamic Education Study Program to develop critical thinking skills.

2. Efforts to develop students' critical thinking skills in seizing opportunities in the Era of Society 5.0.

   Developing students' critical thinking skills in the era of Society 5.0 is something that must be done by the Study Program and Islamic Education lecturers. Helping someone assess information logically, distinguish between facts and opinions, and avoid errors in reasoning are the goals of critical thinking. In addition, critical thinking enhances the ability to think independently, develop a strong skeptical attitude, and see problems from various perspectives. Furthermore, this skill helps improve communication by enabling clear and convincing arguments. Therefore, critical thinking leads to fairer, more accurate, and evidence-based actions and decisions.

   Thus, the Islamic Education Study Program and its lecturers are obliged to develop students' critical thinking skills.

The efforts made to develop students' critical thinking in seizing the opportunities of the Society 5.0 era are as follows:

First, emphasize the implementation of critical thinking in the learning process. To develop critical thinking skills in students, it is necessary to emphasize the implementation of critical thinking in the learning process (Atris Yuliarti Mulyani, 2022). Considering the future, critical thinking skills are a fundamental part of today's world (Rusdiyana et al., 2025). Based on interviews with the head of the study program, in an effort to develop critical thinking skills in students, lecturers are required to implement learning strategies and models that can build critical thinking skills. (SW, Ketua Prodi PAI, 21 Agustus 2025). Also, based on interviews with lecturers, they strongly emphasize the implementation of critical thinking, as it is a requirement of the times. (Wawancara, KI Dosen PAI, 20 Agustus 2025). It is also very helpful in the development of learning (Wawancara, AI Dosen PAI, 21 Agustus 2025). In the teaching process, lecturers usually pay attention to students' critical thinking skills by giving assignments that require analysis and evaluation, holding class discussions to facilitate the exchange of ideas and perspectives, providing constructive feedback to help students improve their critical thinking skills, and integrating real-life cases or case studies into learning to train students in analyzing and solving problems (Wawancara, MP Mahasiswa,10 Agustus 2025). And also "facilitating students by providing learning objectives, relevant sample questions, thinking time, and feedback so that their questions are more focused and targeted" (Wawancara, NJ Dosen PAI, 14 Agustus 2025).

Second, using learning models that can improve students' critical thinking. Yeyen Suryani et al. explain in their article that one way to improve students' critical thinking skills is to apply appropriate learning strategies and models that have an impact on the development of students' critical thinking skills (Suryani et al., 2025). The learning process in the PAI Study Program, in the context of developing students' critical thinking skills, has implemented learning strategies and models, as explained by one of the PAI lecturers:

> "The learning model used in the learning process is designed to encourage students to analyze, evaluate, and solve problems through discussions, case studies, and open-ended questions. This approach encourages them to not only accept information, but also to test, compare, and develop ideas independently, thereby developing their critical thinking skills"(Interview, NJ PAI Lecturer, 14 August 2025).

The learning models used are "PBL, PjBL, CTL, INQUIRY, and STAD models (SW, Head of PAI Study Program, 2025). Cooperative Learning, Inquiry (SW, Ketua Prodi PAI, 2025). Cooperative Learning, Inquiry (Interview, AI PAI Lecturer, 21 Agustus 2025), The models used by lecturers vary depending on the conditions and material being discussed. So far, the models that are often used are: problem-based learning, contextual learning, direct learning, discovery learning, and self-directed learning (Interview, BZ Student, 12 August 2025). This is in line with Hapni Laila Siregar's research in her article, in which she explains that to develop students' critical thinking skills, the dominant learning models applied are problem-based learning and project-based learning (Laila Siregar, 2024). And also in Yeyen Suryani's research, learning that applies the lesson study-based PjBL model with PjBL learning alone has different learning

outcomes in terms of critical thinking skills (Suryani et al., 2025).

Third, using learning strategies that can develop students' critical thinking skills. “Lecturers use learning strategies to develop students' critical thinking skills.”(Interview, MP Student, 10 August 2025), "For example, by asking open-ended questions, requesting journal analysis, and active learning" (Interview, RY Student, 10 August 2025). Then, you can use the ASICC learning strategy as done by Poppy Rahmatika Primandiri et al., in their research, which shows that the ASICC learning strategy can improve students' critical thinking skills (Primandiri et al., 2025).

Fourth, facilitate students in focusing their questions. Lecturers do several things to develop students' critical thinking by:

> “facilitating students in focusing their questions by providing clear and structured question guidelines, using guided discussion or question-and-answer methods, providing examples of questions relevant to the learning topic, and guiding students to identify problems and formulate specific and focused questions.” (Interview, RM Student, 10 August 2025).

In addition, lecturers also “give students the opportunity to ask questions” (Interview, HRP Student,10 August 2025). In addition, lecturers also “give students the opportunity to ask questions” (Interview, RM Student, 10 August 2025). In addition, lecturers also help students to make their questions more focused in a natural and guiding way, for example:

> “First, provide clear instructions from the outset. At the beginning of the lesson, lecturers can explain the objectives of the material and the scope of the topic being discussed. This gives students guidance so that their questions remain relevant. Second, encourage students to identify the core of the problem. Before asking questions, students can be guided to first think about the core of their confusion. Lecturers can ask questions such as, “Which part is unclear?” or “What confuses you about this part?” Third, use appropriate examples of questions. Lecturers can provide specific examples of questions so that students become accustomed to formulating questions that get straight to the point, rather than being too general or broad. Fourth, allow time for thinking. During the discussion, lecturers can pause for a few minutes to allow students to write down their questions. This time helps them formulate more focused questions. Fifth, group and filter questions. If many students ask questions, lecturers can help group similar questions and then focus the discussion on the core issues”(Interview, RA Student, 11 August 2025).

Fifth, adjusting the material to the learning method. In developing critical thinking, PAI lecturers “adjust the material and method by relating it to real-world problems, asking provocative questions, and encouraging in-depth analysis and discussion.”(Interview, NJ PAI Lecturer, 14 August 2025).

"Lecturers can encourage students to think critically by adjusting their teaching materials and methods to be more challenging and relevant. For example, material should not only be presented as a collection of theories, but also linked to real-life cases or current issues that are relevant to the students' field of study. This encourages them to analyze, compare, and find solutions. In addition, lecturers can change their teaching methods from mere lectures to interactive discussions, case studies, or group work. Lecturers can also

ask open-ended questions whose answers are not simply “right” or “wrong,” but require reasoning, evidence, and different perspectives. In this way, students not only receive information, but learn to process, question, and reorganize it into a more mature understanding” (Interview, RA Student, 11 August 2025).

Adjusting teaching materials or content to learning methods that are adapted to developments in science and technology is an urgent matter that teachers must pay attention to. As in Suparni's research, based on her findings, the learning process using teaching materials based on interconnection integration was able to improve students' critical thinking skills (Suparni, 2020).

Sixth, using technology in the learning process. In this era of Society 5.0, which is synonymous with social and technological transformation, young people, especially students, must be adaptive to developments in information technology (Algooth Putranto et al., 2025). Maka mau tidak mau, proses pembelajaran harus menggunakan teknolgi sebagai bagian upaya dalam mengembangkan kemampuan berpikir kritis mahasiswa untuk menangkap peluang-peluang yang ada pada era saat ini. Pada Prodi PAI, para dosen sudah mulai mengembangkan pembelajaran dengan menggunakan teknolgi, seperti dalam wawancara berikut:

> "Lecturers use learning technology to help develop students' critical thinking skills. For example, lecturers utilize interactive presentation media, educational videos, online discussion forums, and digital quiz applications that encourage students to analyze, compare, and solve problems. With this technology, students do not just passively receive material, but are also actively involved in the learning process, such as working on case studies, searching for additional references, and collaborating on problem-based projects. As a result, their ability to critique information and make decisions becomes more refined (Interview, RA Student, 11 August 2025).

In addition, lecturers also use “Google Classroom, PowerPoint, educational videos, and learning management systems to enrich the material and stimulate discussion.” (Interview, RM Student, 10 August 2025). Then, the head of the PAI Study Program explained in a live interview, "As part of efforts to develop students' critical thinking skills, especially in the lecture process related to the use of technology, the study program has made efforts in the form of providing learning facilities in the form of in focus (Interview, SW Head of the PAI Study Program, 21 Agustus 2025).

Seventh, use learning assessments that develop students' critical thinking skills. "Lecturers use learning assessments such as case analysis tests, presentation assessments, portfolios, and written feedback to assess and encourage students' critical thinking skills”(Interview, NL, Student, 10 August 2025).

3. Challenges in developing students' critical thinking in seizing opportunities in the Era of Society 5.0

Based on the results of the study, several obstacles were found in developing students' critical thinking in the lecture process, namely:

First, variations in student abilities. In developing students' critical thinking, the obstacle is the level of diversity in student competencies. Some students already have good abilities, while others are still in the process of developing them, which becomes an obstacle in developing students' critical thinking abilities (Interview, AM PAI Lecturer, 10 August 2025). Variations in student abilities are also caused by students

who lack knowledge due to weak digital literacy, which hinders the process of developing students' critical thinking skills (Interview, RA Student, 11 August 2025). As in the research by Betty Sitompul et al., it is stated that weaknesses in digital literacy affect students' critical thinking skills (Paramudia et al., 2021). Furthermore, students with high digital literacy tend to have better reasoning skills and are able to understand the social and ethical context of the information they receive (Algooth Putranto et al., 2025)

Second, time constraints. Time constraints are one of the obstacles to developing students' critical thinking skills. Therefore, as lecturers, we must have a well-thought-out plan in preparing lectures so that we can develop students' critical thinking skills (Wawancara, KI, Dosen PAI, 20 Agustus 2025). In attending lectures, time constraints make it difficult for students to develop critical thinking skills. "When we are engrossed in solving a problem in class, time flies by, and we feel that we don't have enough time in the lecture process even though we are enthusiastic about participating in the learning process" (Interview, RS, Student, 15 August 2025).

Third, the lecture process is still oriented towards memorization. In the lecture process, there are several lectures that are oriented towards memorization, resulting in the development of students' critical thinking skills being slightly hampered (Interview, IW, Student, 11 August, 2025). The habit of memorizing material is one of the obstacles in developing students' critical thinking, because students are accustomed to memorizing rather than analyzing material (Interview, SJ, Student, 14 August 2025).

Fourth, lack of confidence. One of the obstacles in developing students' critical thinking is their lack of confidence due to embarrassment and fear in presenting their analysis of a subject (Wawancara, RY, Mahasiswa, 14 Agustus 2025). In addition, they are hesitant to express their opinions for fear of being wrong (Interview, MRD, Student, 14 August 2025).

Fifth, inadequate facilities and infrastructure. One of the obstacles in developing students' critical thinking skills is the lack of projectors that can be used in the lecture process. Sometimes there is material that requires a projector in the lecture process, but there are not enough projectors to cover the entire lecture process (Interview, KI, PAI Lecturer, 20 August 2025). Facilities and infrastructure also hinder the thinking process, such as inadequate classroom air conditioning, which hinders thinking when it is hot" (Interview, SU, Student, 16 August 2025).

Sixth, the lack of training, seminars, and webinars for lecturers. One of the obstacles in developing students' critical thinking is the lack of training, seminars, and webinars for lecturers. There are no webinars, seminars, or training sessions for lecturers organized by study programs, and even if there are, they are organized by the university (LPM) (SW, Ketua Prodi PAI, 2025).

Discussion of Key Findings

Based on the research data presented above, it can be concluded that: First, there is diversity or variation in students' levels of critical thinking. Quantitatively, the researcher did not identify factors causing variations in students' critical thinking abilities; however, theoretically—according to Rubenfeld & Scheffer—differences in an individual's critical thinking ability are attributed to physical conditions, beliefs or motivation, anxiety, habits or routines, and intellectual development (Maryam S, Setiawati, Ekasari, M, 2008). Meanwhile, in a study by Januari Ayu Fridayani et al., the authors suggest that

several factors influence students' critical thinking skills, namely self-efficacy, motivation, and time management. These three factors each play a role in influencing students' critical thinking skills (Fridayani et al., 2022). In their study, Olenggius et al. explain that variations in critical thinking skills are caused by three factors: psychological factors, physiological factors, factors related to independence, and factors related to interaction (Olenggius Jiran Dores, n.d.).

Second, students' critical thinking skills fall into the high category, with a predominance of high scores. This means that PAI students' critical thinking skills are strongest in the "basic support" category, where students have demonstrated strong abilities to assess the credibility of information sources and to use observational findings as a basis for forming opinions and making decisions.

When compared to the study (Munawaroh & Siswono, 2021), Explored students' critical thinking skills by assigning three pairs of participants to Collaborative Problem Solving groups: high-low, medium-low, and high-medium critical thinking pairs. The results showed that the high-low and high-medium critical thinking pairs were able to identify the core issues presented, while the moderate-low pairs were unable to perform analysis and evaluation. In this study, however, no treatment was applied to the respondents; instead, the level of critical thinking ability was explored based on each indicator, and the results showed that their critical thinking ability was at a high level.

As for the research (Marlina, 2020) Explored students' critical thinking skills through their learning experiences in organizations. Her research findings indicate that student participation in organizational activities can enhance critical thinking skills, though she assessed this based on observable signs or behaviors exhibited by the students. Similarly, the study (Priatna et al., 2020) This research is a study on the development of a STEM-based learning model designed to enhance students' critical thinking skills. The development study focuses on the creation of instructional materials and whether these materials are suitable for implementation. Based on the test results, the instructional materials developed are highly flexible, the instructions within them are easy for students to understand, and they are suitable for use in a limited scope.

Although students possess a high level of critical thinking skills, the Islamic Education Study Program still needs to further develop these skills through the teaching process. Based on research data, the efforts undertaken to develop students' critical thinking skills include: First, emphasizing the implementation of critical thinking in the learning process; Second, using learning models capable of enhancing students' critical thinking; Third, employing learning strategies capable of developing students' critical thinking skills; Fourth, facilitating students in formulating focused questions; Fifth, aligning instructional materials with teaching methods; Sixth, incorporating technology into the learning process; and Seventh, utilizing assessment methods that foster students' critical thinking.

However, several obstacles have been encountered in these development efforts, namely: First, variations in students' abilities; Second, time constraints; Third, the teaching process remains focused on rote memorization; Fourth, a lack of self-confidence; Fifth, inadequate facilities and infrastructure; and Sixth, a lack of training, seminars, and webinars for faculty members. These factors cause variations in the critical thinking skills of PAI students, thereby potentially hindering efforts to develop critical thinking skills.

CONCLUSION

The results of the study indicate that the critical thinking skills of students in the Islamic Education (PAI) program at IAIN Curup fall into the high category. These findings suggest that the majority of students are capable of analyzing information, evaluating various issues, and constructing logical arguments and decision-making processes. An analysis by aspect shows that students' critical thinking skills have developed relatively evenly across all measured aspects, although aspects related to strategy and decision-making still require further strengthening.

Efforts made to develop students' critical thinking skills include emphasizing the implementation of critical thinking in the learning process, using problem-solving-oriented learning models and strategies, providing opportunities for students to discuss and express their opinions, utilizing learning technologies, and implementing an evaluation system that encourages analytical and reflective skills. These various efforts demonstrate the commitment of the study program and faculty in preparing students to face the challenges and opportunities of the Society 5.0 era.

The challenges still faced in developing students' critical thinking skills include differences in ability among students, time constraints in the learning process, a tendency for learning to remain rote-memorization-oriented, low self-confidence among some students in expressing their opinions, limited learning support resources, and the fact that faculty competency development activities are not yet optimal. Therefore, more systematic and sustained efforts are needed so that students' critical thinking skills can develop more optimally and evenly.

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