



Trends in ‘Critical Thinking’ as a National Research Theme in Indonesia for the Period 2021 - 2024

Mahir¹, M. A. Martawijaya², Abdul Haris³
^{1,2,3}Universitas Negeri Makassar

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Abstract

This study aims to analyze the trend of students' critical thinking skills in national research proposals received by the Directorate of Research, Technology, and Community Service (DRTPM) in Indonesia over the past four years. Critical thinking is an essential ability in 21st-century education, which includes interpreting, analyzing, evaluating, and inferring information by students to produce solutions to real problems. Data were taken from research proposals received and approved by DRTPM from 2021 to 2024. The analysis method includes a descriptive quantitative assessment of the number of proposals that make students' critical thinking skills the central theme of education research. The study results show a significant improvement trend in the theme of students' critical thinking skills in the proposals submitted by researchers over the past four years, especially in implementing various efforts to improve students' critical thinking skills. These findings are expected to provide input for DRTPM to develop research policies and training programs to continue improving the quality of research in Indonesia.

Keywords: *Critical Thinking Skills, Education Research Proposals, Trend Analysis*

Introduction

The Indonesian government has recognized the importance of critical thinking skills for students, as reflected in the 2013 curriculum and the guidelines for the development of the curriculum in the Industry 4.0 era (Pravita & Kuswandono, 2021). Studies have shown that Indonesian students' critical thinking skills are still low, with the country ranking below average in international assessments such as PISA (Sari et al., 2019). To address this issue, the Indonesian government has made the development of critical thinking skills a national priority, with the term "critical thinking" becoming a prominent theme in national research agendas from 2021 to

2024 (Pravita & Kuswandono, 2021). (Nuri et al., 2019) This shift reflects the government's recognition of the need to equip students with the necessary skills to navigate the complex and rapidly changing 21st-century landscape.

The Directorate of Research, Technology, and Community Service (DRTPM) in Indonesia has a very important role in encouraging and facilitating the advancement of research, technology, and community service. The main goal of DRTPM is to improve the quality and quantity of relevant and innovative research, which can ultimately make a real contribution to national development and improve people's welfare (Suparmoko,

2020). In the era of globalization and international competition is getting tighter (Paul, 2021), DRTPM strives to create a conducive research ecosystem, researchers and academics can develop creative ideas and innovative solutions that are able to answer the nation's strategic challenges (Zapata-cantu & González, 2021). One of the main focuses of DRTPM is to facilitate research oriented towards the development of technology and its application in various sectors, including education, health, environment, and industry (Cavaliere et al., 2022; Vieira et al., 2022).

In addition, DRTPM is also committed to improving the capacity and competence of researchers through various training programs and workshops. This initiative not only aims to strengthen the technical capabilities of researchers, but also to build a strong network of collaboration between educational institutions, industry, and government (Diana & Hakim, 2021; O'Dwyer et al., 2023). This collaboration is expected to accelerate the transfer of technology and knowledge, as well as encourage sustainable innovation (Saphira et al., 2024; Utomo & Harjono, 2021). Another purpose of DRTPM is to integrate research results with community service activities, so that research results are not only useful in the academic scope, but also have a direct positive impact on the community. Through community service programs, DRTPM strives to apply research results in the form of practical solutions that can improve the quality of life of the community, especially in areas that are still underdeveloped.

To achieve these goals, DRTPM implements various policies and strategies that support the development of research and technology in Indonesia. One of them is by providing adequate funding support and facilities for research that is considered to have great potential to make a significant contribution (Schlander et al., 2021). In addition, DRTPM also seeks to create synergies between various related parties, including educational institutions, government, industry, and communities, in order to encourage a more dynamic and

productive research ecosystem. With various initiatives and programs that have been and will continue to be developed, DRTPM is expected to play a central role in transforming Indonesia into a more advanced, globally competitive, and prosperous nation through research, technology, and community service on various themes (Kristiyanti et al., 2023).

A research proposal that raises the theme of students' critical thinking skills is very important for DRTPM in Indonesia. This is because the ability to think critically is not just an additional skill, but the main foundation in the development of academic and professional competencies (Pare & Sihotang, 2023), which is very relevant to the challenges of today's times. Critical thinking skills include the ability to manage information well, critically evaluate evidence, and make informed decisions (Raj et al., 2022). In the digital era and globalization like now, information is abundant and change is happening so quickly, critical thinking skills are the key in preparing students to become future leaders who are able to adapt and take initiative in facing various complex problems (Almirah et al., 2022).

This research is also relevant to innovation, because critical thinking skills allow individuals to develop new solutions that are in line with the needs of the times (Almirah et al., 2022). On the other hand, in the context of the modern world of work, where speed and precision in decision-making are highly valued, critical thinking skills provide a competitive advantage for graduates in responding to professional challenges more effectively (Susanita & Riani, 2024). Furthermore, critical thinking skills are not only about individual excellence, but are also an indicator of the overall quality of education in a country. By improving this ability at all levels of education, from primary to tertiary education, Indonesia can strengthen the intellectual foundation of its society as a whole. This will have a significant long-term impact on the development of quality and highly competitive human resources.

Therefore, research on students'

critical thinking skills is not only academically relevant but also has great practical implications for curriculum development, teaching strategies, and educational evaluation in Indonesia. DRTPM has a vital role in supporting this research to ensure that the findings and recommendations of the research can be effectively implemented in the national education system. Thus, this research is not only about improving our understanding of the importance of critical thinking in the context of education, but also about creating real changes that can strengthen the foundations of Indonesian education towards a brighter and globally competitive future.

Over the past four years, DRTPM Indonesia has received various research proposals that highlight various aspects, including improving students' critical thinking skills. However, there has been no specific study that describes the trend of using the theme of improving students' critical thinking skills in research proposals over the past four years. Thus, this study will provide a deeper understanding of how often and in what context the theme of critical thinking skills is proposed in research proposals. It is important to evaluate the extent to which this topic is considered and integrated into the national research agenda, so that an analysis of proposal submission patterns and the sustainability of existing programs can provide insight into the extent to which the theme of critical thinking skills is integrated into the long-term and strategic research agenda in Indonesia. By analyzing this trend, we can evaluate whether there is an increase in awareness of the importance of critical thinking skills in the context of Indonesian education. It helps in measuring the educational response to evolving global and local demands. Knowing this trend will help better direct research and curriculum development policies at the national level. This ensures that the research and development efforts carried out are in accordance with the real needs of the community and are able to have a significant impact in improving the quality

of education.

In recent decades, education in Indonesia has undergone a significant transformation with an increase in the number and quality of research and development programs supported by the Directorate of Research, Technology, and Community Service (DRTPM). These programs not only aim to improve technological innovation but also to develop students' critical thinking skills. Therefore, seeing the importance of this development, it is necessary to conduct research to analyze the trend of students' critical thinking skills in the proposals received by DRTPM Indonesia over the past four years

Research Methods

This study uses a document analysis approach (Morgan, 2022; Zadgaonkar & Agrawal, 2021), focusing on research proposal data that has been approved by DRTPM. This data is collected from archives and databases related to these proposals on the Research and Community Service Information Base (BIMA) page of the Ministry of Education, Culture, Research, and Technology. Data collection was carried out by obtaining access to the announcement of the title of the proposal received and approved by DRTPM which refers to the theme of students' critical thinking skills. The data used in this study are research proposals received by DRTPM from 2021 to 2024. The inclusion criteria (Delahunt et al., 2010) proposals include all proposals that explicitly establish students' critical thinking skills as the main theme of research in the field of education. After identification, the data will be extracted for further analysis.

Data analysis was carried out in two main stages, namely Quantitative Descriptive Analysis (De Pilli et al., 2024; Newilah et al., 2024) to calculate the number of proposals using the theme of students' critical thinking skills. This will provide an understanding of how often this theme has been adopted in research proposals over the last four-year period. In addition, trend analysis will be carried out to identify changes in the use of the theme of

critical thinking skills from year to year. This will help in evaluating whether there is an increase or decrease in the focus of this study from 2021 to 2024. The results of the analysis will be interpreted to describe the trend of using the theme of students' critical thinking skills in national research proposals in Indonesia. These findings will provide a better understanding of changes and patterns in education research in the country, as well as their potential implications for future policy and program development.

The results of this study are expected to provide important input for policy development by DRTPM regarding the recognition and application of the theme of critical thinking skills in research proposals. It can also provide a foundation for the development of better research training programs, which aim to improve the critical thinking skills of students in Indonesia, in accordance with the demands of 21st century education. Using this approach, this study is expected to make a significant contribution to the understanding and improvement of research practices in the field of education in Indonesia, with a special focus on developing students' critical thinking skills as a top priority.

Results and Discussion

Research Results

This study reveals a significant trend regarding the theme of students' critical thinking skills in research proposals received by DRTPM in Indonesia over the past four years. The data analyzed included approved research proposals from 2021 to 2024.

Quantitative descriptive analysis

Based on the results of quantitative descriptive analysis, it was found that the number of proposals that focused on students' critical thinking skills as the main theme increased significantly from year to year as shown in Figure 1 below.

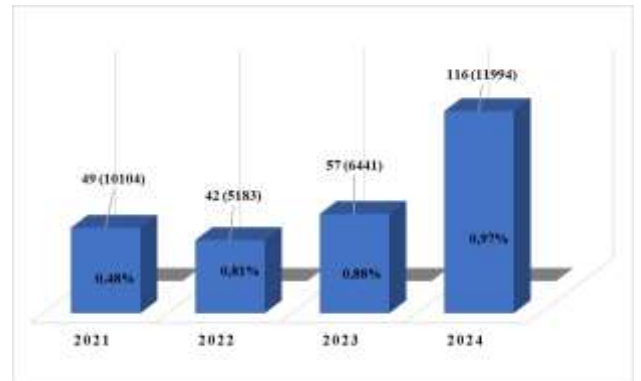


Figure 1. Percentage of Number of Themes "Thinking Kritis"

Based on the figure, it can be described that from 2021 to 2024, there will be a significant increase in the percentage of proposals that raise the theme of critical thinking. This reflects a paradigm shift and increased researchers' awareness of the importance of building critical thinking skills in students in preparation for the complexity and dynamic changes in the modern world after going through the new-normal period after the Covid-19 pandemic (Mutiarin, 2021). The increasing number of research proposals emphasizing critical thinking skills indicates a growing awareness among researchers of the importance of these skills in facing the complex challenges of the 21st century. Furthermore, 21st century competencies are socialized by the Ministry of Education under the designation of the 4Cs, namely creative thinking, critical thinking and problem solving, communication, and collaboration (Ripal et al., 2023). Critical thinking skills are considered crucial in preparing students to face global dynamics and rapid changes in various sectors of life (Frisnoiry, 2024).

This increase also reflects the active efforts of researchers to strengthen evidence-based education and align research with real needs in society (Nisak et al., 2024). By integrating critical thinking skills in their proposals, researchers are expected to make a more meaningful contribution to improving the quality of education and human resource development in Indonesia. At the policy level, these findings provide a strong basis for DRTPM to direct its programs with a greater focus on developing curricula that support critical thinking skills.

Expanding and increasing investment in research training that integrates critical thinking aspects can be a strategic step to advance Indonesian education towards higher international standards (Santoso et al., 2023).

Thus, the results of this study not only provide an overview of the trend of research approaches in Indonesia but also provide a strong foundation for the development of education policies that are more future-oriented and responsive to increasingly complex global demands.

Trend analysis

Based on the results of trend analysis, it was found that the form of effort in the use of the theme of critical thinking skills from year to year was found as shown in figure 1 below.

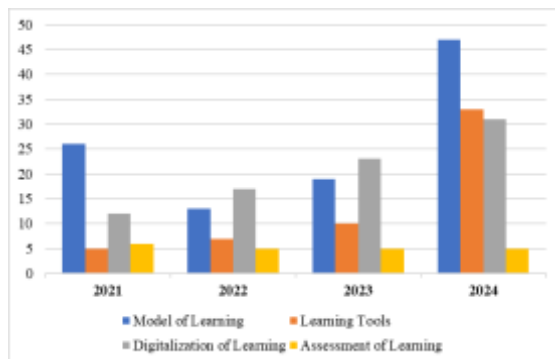


Figure 2. Trend Analysis of the Theme "Critical Thinking"

In 2021, research proposals that explicitly include critical thinking skills through efforts to integrate learning models have a greater proportion, followed by the integration of technological devices in learning.

In 2022, the integration of technological devices in learning shows the largest proportion in efforts to improve students' critical thinking skills. This happens because of the awareness of researchers in Indonesia about the importance of improving students' critical thinking skills in the era of very rapid digital development. Studies are beginning to highlight the importance of building students' ability to critically analyze information, evaluate arguments, and make evidence-based inferences. The spread of hoaxes is very rampant today, therefore

education is responsible for equipping the nation's generation with the application and development of technology to face the future.

In 2023, this trend is getting stronger. Research proposals have begun to show diversification in approaches to measure and improve critical thinking skills, including the development of various technological devices that are directly integrated with the content of learning materials, the combination of various innovative learning approaches, the development of teaching materials based on local excellence, the development of learning instruments, and the development of curriculum aimed at improving students' critical thinking skills. The adoption of educational technology and the use of digital resources are increasingly being used to support learning in improving students' critical thinking skills at various levels of education.

In 2024, there will be a consolidation of these various initiatives. Studies are beginning to show concrete evidence of the effectiveness of various approaches to improve students' critical thinking skills. Data from the evaluation of educational programs showed a positive improvement in critical thinking skills among students involved in these programs. The change in the form of efforts in the use of the theme of critical thinking skills from year to year reflects a significant evolution in the educational paradigm in Indonesia. From awareness of the importance of critical thinking skills to the application of innovative practices in curriculum and learning, DRTPM-approved research shows a growing commitment to building students' intellectual capacity.

This increase can also be seen as a response to global demands and the need for human resources who are able to adapt and innovate in the digital and information era (Ehstika et al., 2016). By strengthening critical thinking skills, Indonesia is in a better position to produce graduates who are not only academically competent but also ready to face the complex challenges facing modern society. Further development in this

area is not only relevant for individual development, but also strategic in facing global challenges and ensuring that education in Indonesia can play a role as a driving force for progress and innovation in various sectors. Therefore, the results of this study provide a solid basis for the development of future education policies and programs that are more results-oriented and responsive to the needs of the community.

This study identifies specific trends related to critical thinking skills among researchers under the auspices of DRTPM, which have not been widely studied comprehensively. These findings provide a clearer picture of the development and changes in critical thinking skills over a period of time. These findings point to the need for diversification in the way of measuring and improving critical thinking skills. This includes the development of more diverse and comprehensive evaluation instruments to effectively measure critical thinking skills at different levels of education. A good evaluation instrument can help schools and educational institutions assess student progress and identify areas for improvement.

The development of teaching materials that encourage students to think critically is an important step. These teaching materials should be designed to stimulate in-depth analysis, critical evaluation, and evidence-based decision-making. Thus, students can learn how to formulate strong arguments and creative solutions to complex problems. The adoption of various learning approaches that encourage critical thinking skills needs to be improved. Approaches such as problem-based learning, project-based learning, philosophical discussions, and academic debates can significantly improve students' critical thinking skills. The integration of technology in this approach can also expand access and effectiveness of learning.

Continuous training for educators is the key to supporting the development of students' critical thinking skills (Hanipah, 2023). Educators need to be equipped with teaching strategies and techniques that

promote critical thinking in the classroom (Hidayanti et al., 2016). This includes the ability to stimulate discussion, provide constructive feedback, and design tasks that challenge learners to think critically. Curriculum development or revision that focuses on developing critical thinking skills is an important long-term investment. A curriculum that supports the development of critical thinking skills not only influences the teaching-learning process in the classroom, but also prepares learners to face challenges in their personal and professional lives in the future. Through the analysis of secondary data from research reports and publications published over nearly a decade, the study provides comprehensive empirical data that can be used as a reference for further studies or future comparisons. Thus, this study makes a new contribution in understanding the factors that affect the critical thinking ability of researchers in Indonesia, as well as providing a basis for future policy improvements and training programs.

Conclusion

This study reveals a significant improvement trend in the theme of students' critical thinking skills in the 2021-2024 DRTPM Indonesia research proposal. These findings are important for future research policy and training, emphasizing the integration of different approaches to improve critical thinking skills, including the development of advanced evaluations, critical thinking teaching materials, and training for educators. The commitment of researchers in facing the complexity of the 21st century and the preparation of more adaptive and innovative human resources is expected to advance the quality of education and research in Indonesia in a sustainable manner.

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