

## COGNITIVE EMPATHY: A KEY LEARNING MODALITY FOR ERA 5.0

Mirna Ari Mulyani<sup>1\*</sup>, Aprilia Setyowati<sup>2</sup>, Irfan Fahriza<sup>3</sup>, Ayu Yusaeni<sup>2</sup>

<sup>1\*</sup>Universitas Islam Negeri Raden Fatah Palembang, Indonesia

<sup>2,4</sup>Universitas Ahmad Dahlan, Indonesia

<sup>2</sup>Universitas Ma'soem, Indonesia

\*Corresponding author, *e-mail*: mirnaarimulyani\_uim@radenfatah.ac.id

**Abstract:** Learning in the era of society 5.0 is oriented towards the character and ability of students to behave prosocially amid technological convenience. However, many students are not fully able to integrate cognitive abilities and empathy in social interactions. This research aims to formulate the dimensions of cognitive empathy that support learning success in the 5.0 era, as well as identify relevant guidance activities in the development of cognitive empathy. The research method employed a Systematic Literature Review of 8 Scopus articles that met the inclusion criteria. The results of the study reveal the dimensions of cognitive empathy that are crucial for learning success in the 5.0 era, namely perspective-taking, contextual understanding, rational and ethical thinking, and human-centered problem-solving. Alternative guidance can use narrative media, technology-based interactive simulations (including AI), and design thinking training, all of which focus on developing pro-social perspectives and actions.

**Keywords:** Empathy; cognitive; learning; society 5.0;

### INTRODUCTION

Over the past decade, Indonesia's education system has undergone rapid transformation. Starting from a character-based model, switching to Merdeka Belajar, and now moving towards Deep Learning, each change has its characteristics, but shares the same goal: to produce independent individuals. (Putri et al., 2024) Innovative (Anggraini, 2022), able to solve problems (Tarigan et al., 2022) Moreover, be ready for global challenges. (Tintington et al., 2023). These changes align with the Sustainable Development Goals (SDGs) in education, which aim to facilitate lifelong learning, develop creativity and problem-solving skills, and foster a democratic and student-centered learning environment. (Nazar et al., 2018). This effort aims to produce graduates who not only excel academically but also have strong personalities and care for the social environment. (Rulandari, 2021).

Personalization and meaningful learning are the keywords of the 5.0 era learning orientation. Learning is no longer oriented toward memorization, but toward the active

involvement of students in exploring and discovering the meaning of the motorcycle taxi they have learned. (Huang et al., 2011). Students are facilitated to direct their learning by solving problems, experimenting, analyzing information, or choosing the most effective way to learn for themselves. The ideal condition is expected for students to be able to interact, collaborate, construct Knowledge, and reflect together. (Jeet & Pant, 2023).

Empathy is a personal factor of students that needs to be strengthened to support the learning experience. Good empathy helps individuals in enriching social relationships, broadening perspectives, and finding new perspectives (*Novelty*) (Gerdes et al., 2011). Empathy also enables individuals to see problems from different perspectives, increasing cognitive flexibility and encouraging more innovative and creative solutions. (Köppen & Meinel, 2015; Tie et al., 2024) .

Apart from the social context, empathy is a crucial aspect of the readiness to learn that the current generation must possess. As a form of learning readiness, empathy plays a crucial role in aligning cognitive and emotional potential, while also facilitating a deeper understanding of the subject matter.(Franzese, 2016). Martin Buber explained that when individuals learn by using empathy, there is a process of recognition, transition, and making sense of the situation around them. (Bell, 2018).

In this study, the researcher focuses on the role of cognitive empathy as a learning modality. Cognitive empathy is the ability to understand other people's perspectives, feelings, and thoughts in a rational manner. Education in the 5.0 era emphasizes IT-based learning and humanistic views that personalize learning according to the characteristics of students and their environment. The role of cognitive empathy necessitates collaboration, adaptability, and critical thinking in the face of these technological advancements.

In this era of Society 5.0, learning must be oriented towards the character and abilities of students to behave prosocially amid the convenience of technology. The fact is that many students are technologically skilled, but have not been fully able to integrate cognitive abilities and empathy in social interactions, both in-person and digitally. (Khoiriyah & Thohir, 2023). Therefore, this study will identify the dimensions of cognitive empathy that require guidance and counseling to promote, thereby supporting the success of student learning in the 5.0 era.

## METHOD

The Systematic Literature Review research method was employed in this study to address two research questions: (1) What are the dimensions of cognitive empathy that contribute to student learning success in the 5.0 era? (Q1), and 2) What guidance services can be done in strengthening students' cognitive skills? (RQ2). The research began by searching the literature through Publish or Perish (PoP) using the keywords "cognitive empathy, counselling, learning", with the Scopus reference source. The literature search was conducted on research articles from the last five years. Next, the researcher conducts a screening process to obtain reliable literature that meets the specified criteria.

Table 1 below outlines the criteria used by researchers to determine the primary data source (inclusion) for the literature.

Table 1. Inclusion criteria

No	Filter	Criterion
1	Year	2019-2024
2	Publication	Scopus
3	Research Areas	Education, Counseling
4	Approach	Empathy development of school students, Literature review of cognitive empathy, counseling strategies in the development of empathy

In the initial search, 200 articles related to the keyword cognitive empathy were obtained. Generally, the articles that appear are related to the impact of mental health disorders on individual empathy, making it easier for researchers to eliminate. After reviewing and comparing the articles with the criteria in Table 1, eight Scopus articles relevant to the criteria and objectives of this study were selected.

## RESULT AND DISCUSSION

This research aims to formulate the dimensions of cognitive empathy that support learning success in the 5.0 era, as well as identify relevant guidance activities in the development of cognitive empathy. The references that provide the data for this research offer both conceptual and empirical testing. References in the 2019-2024 range indicate that the data of this study align with the latest international learning developments. The results of the literature review are presented in Table 2 below.

Table 2. Research results

No	Author, Years	Title	Publication	Insight
1.	(Bagheri et al., 2021)	A Reinforcement Learning Based Cognitive Empathy Framework for Social Robots	International Journal of Social Robotics	<ol style="list-style-type: none"> <li>1. Perspective taking and recording information support the success of student learning in the 5.0 era, specifically understanding the perspective of others accurately in a technological and artificial intelligence environment</li> <li>2. Tutoring can be created in interactive simulations to train students to recognize emotions and social reactions. It can be integrated with AI, such as empathetic chatbots or digital-based role-playing.</li> </ol>

No	Author, Years	Title	Publication	Insight
2.	(Dorris et al., 2023)	Cognitive empathy across the lifespan	Developmental Medicine & Child Neurology	<ol style="list-style-type: none"> <li>1. Cognitive empathy develops with age and is influenced by executive functions, such as self-control and planning. Students with high cognitive empathy tend to exhibit better learning engagement and problem-solving skills.</li> <li>2. Individuals need optimization of executive function to strengthen cognitive functioning through activities such as self-regulation, self-reflection, and group dialogues</li> </ol>
3.	(Hanim & Djunaedi, 2019)	Development of digital character education comics to improve cognitive empathy	International Journal of Innovation, Creativity and Change.	<ol style="list-style-type: none"> <li>1. The role of educational media in enhancing cognitive empathy is to stimulate students' understanding of others' emotions and social reasoning.</li> <li>2. Educational comic characters can be used in group counseling sessions as a medium of creative guidance to foster the ability to recognize and respond to other people's perspectives.</li> </ol>
4.	(Karn, 2022)	Historical Empathy: A Cognitive-Affective Theory for History Education in Canada	Canadian Journal of Education	<ol style="list-style-type: none"> <li>1. Learning to understand the social and psychological context of the character, as well as training to practice the ability to mentalize and contextualize the experiences of others, are two important aspects of cognitive empathy.</li> <li>2. Activities exploring life stories and collective experiences can increase empathy.</li> </ol>

No	Author, Years	Title	Publication	Insight
5.	(Martingano & Konrath, 2022)	How cognitive and emotional empathy relate to rational thinking: empirical evidence and meta-analysis	The Journal of Social Psychology	<ol style="list-style-type: none"> <li>1. Positive cognitive and emotional empathy with the ability to reason and make moral decisions. Both are important in education in the 5.0 era, which is oriented towards critical thinking.</li> <li>2. Guidance can be directed at ethical decision-making exercises, moral discussions, and social dilemmas as a means to cultivate rational empathy.</li> </ol>
6.	(Samuels & Onuoha-Jackson, 2023)	Learning to care: An in-school humane education program improves affective and cognitive empathy among lower-elementary students	International Journal of Educational Research Open	<ol style="list-style-type: none"> <li>1. Cognitive empathy can be cultivated through a school's humanities program that emphasizes active observation, reflective discussion, and prosocial responses.</li> <li>2. This process has an impact on the quality of healthy social interaction and cooperative learning.</li> </ol>
7.	(Vassallo et al., 2023)	Design thinking and public sector innovation: The divergent effects of risk-taking, cognitive empathy, and emotional empathy on individual performance	Research Policy	<ol style="list-style-type: none"> <li>1. Cognitive empathy is needed in creative and collaborative learning design.</li> <li>2. Training students in <i>design thinking</i> can encourage empathy for social problems and foster solution-based empathy</li> </ol>
8.	(Hatt et al., 2023)	Design Thinking as Pedagogy in Practice	International Journal of Management and Applied Research	<ol style="list-style-type: none"> <li>1. Cognitive empathy is essential in the pedagogical approach of design thinking, as students are invited to understand the problem from the point of view of other individuals</li> <li>2. The integration of design thinking in tutoring and career services can increase empathy for collaborative project-based learning experiences.</li> </ol>

Based on the mapping in Table 2, it can be seen that the dimensions of cognitive empathy that play a role in the success of student learning in the 5.0 era (RQ1) are perspective-taking, contextual understanding, rational and ethical thinking, and human-centered problem-solving. *Perspective-taking* is the ability to understand and interpret the thoughts of others. (Bagheri et al., 2021; Karn, 2022) This dimension encourages the process of collaboration and understanding of complex materials. *Contextual understanding* is a dimension related to the ability to place oneself in a particular situation, where the individual considers the social-emotional background of the people around them, different ideas or thoughts, and uses their understanding to predict their actions and interact appropriately in the social environment. (Dorris et al., 2023; Hanim & Djunaedi, 2019). *Rational and ethical thinking*. In empathetic decision-making, individuals use an understanding of the situation and others to make decisions that are both ethical and intelligent. (Martingano & Konrath, 2022; Samuels & Onuoha-Jackson, 2023). Human-centered problem-solving is the ability to understand the needs and problems of others, using this understanding as the basis for innovation and the search for practical solutions. (Hatt et al., 2023; Vassallo et al., 2023).

Empathy is a situational cognitive process, an empathic response depending on a specific situation and context. (Melloni et al., 2014). Cognitive empathy is more rational than emotional empathy. (Yu & Chou, 2018) and emphasizing executive function, i.e., determining the empathetic attitudes and prosocial behaviors demonstrated by individuals (Cristofani et al., 2020). These abilities enable individuals to interact healthily, collaborate, and exhibit a prosocial attitude. (Samuels & Onuoha-Jackson, 2023). Flexible, ethical, and contextual decision-making is the result of a cognitive empathy model. Cognitive empathy focuses on understanding the needs and context of a situation in order to develop practical and relevant solutions. (Husin et al., 2025). Thus, this ability is highly relevant to the learning of the Society 5.0 era, where students learn to provide solutions and make a real contribution to society through their learning.

The development of cognitive empathy through guidance services can be facilitated by helping students learn and consider diverse individual perspectives. Guidance activities can use narrative media, such as comics. (Hanim & Djunaedi, 2019) or someone's life story (Karn, 2022). In addition, the use of technology in interactive simulations and AI integration, such as empathic chatbots or digital-based roleplay, can be an option for developing empathy. (Bagheri et al., 2021). In the use of AI, one key to the success of tutoring is to constantly stimulate students to engage in brainstorming. (Suryahadikusumah et al., 2024). Training *Design Thinking*. For students, it can be done separately or integrated into the learning process as an exercise to understand problems from various perspectives and design solutions. (Hatt et al., 2023; Vassallo et al., 2023). Alternative guidance activities emphasize developing perspectives and reflecting them on pro-social ideas or actions.

## CONCLUSION

This research identifies the dimensions of cognitive empathy that are important for learning success in the 5.0 era, namely *perspective-taking, contextual understanding, rational and*

*ethical thinking, and human-centered problem solving*, which allows students to understand the perspectives of others, reason social-emotional contexts, make ethical decisions, and solve problems with innovative solutions. The development of cognitive empathy can be facilitated through mentoring services that use narrative media, technology-based interactive simulations (including AI), and design thinking training, all of which focus on developing pro-social perspectives and actions.

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