JURNAL CENDEKIA : Media Komunikasi Penelitian dan Pengembangan Pendidikan Islam
Volume 18, Issue 01, March 2026, Pages 255-268 p-ISSN: 2086-0641 (Print)
e-ISSN: 2685-046X (Online)

DOI: https://doi.org/10.37850/cendekia.v18i01.1319
https://journal.faibillfath.ac.id/index.php/cendekia

RECONCEPTUALIZING NON-COGNITIVE SKILLS AS DRIVERS OF 21st CENTURY COMPETENCIES IN ISLAMIC EDUCATION: A LITERATURE-BASED ANALYSIS

Helmi Handoko[1] *, Meli Puspita[2] , Muhammad Sirozi[3]
[1,2,3] UIN Raden Fatah Palembang
email: helmihandoko@radenfatah.ac.i d [1] ; Melipuspita45@guru.sd.belajar.id [2] , msirozi@gmail.com [3]
* Corresponding Author

Received 10 February 2026; Received in revised form 27 March 2026; Accepted 14 April 2026

Abstrak

Penelitian ini bertujuan untuk mengkonseptualisasikan ulang keterampilan non-kognitif sebagai pendorong utama kompetensi abad ke-21 dengan mengklarifikasi definisinya, menganalisis perannya dalam keberhasilan adaptif, dan merumuskan rekomendasi praktis untuk Pendidikan Agama Islam. Artikel ini berkontribusi dengan menawarkan kerangka konseptual yang disintesis yang memposisikan keterampilan non-kognitif sebagai pendorong integratif yang menghubungkan kemampuan kognitif dan kompetensi 4C, membahas fragmentasi konseptual yang ditemukan dalam penelitian sebelumnya. Penelitian ini menggunakan desain penelitian perpustakaan dengan analisis deskriptif kualitatif. Sumber data dipilih berdasarkan relevansi dan kredibilitas, termasuk artikel ilmiah, dokumen kebijakan, dan studi sebelumnya. Analisis dilakukan melalui kategorisasi tematik dan sintesis konseptual untuk mengidentifikasi pola dan hubungan kunci. Temuan menunjukkan bahwa keterampilan non-kognitif yang mencakup aspek intrapersonal (motivasi, ketahanan, pengaturan diri) dan aspek interpersonal (komunikasi, kolaborasi) berfungsi sebagai pendukung dasar yang mengoptimalkan kinerja kognitif dan mendukung pengembangan keterampilan 4C. Studi ini juga menyoroti peran strategis mereka dalam perspektif Teori Kognitif Sosial dan Teori Modal Manusia. Implikasinya menunjukkan bahwa Pendidikan Agama Islam harus mengintegrasikan pengembangan keterampilan non-kognitif secara sistematis ke dalam kurikulum, pedagogi, dan budaya sekolah. Rekomendasi praktis meliputi penerapan Pembelajaran Sosial-Emosional, pembelajaran berbasis proyek, dan praktik berorientasi pola pikir pertumbuhan untuk meningkatkan karakter, kemampuan beradaptasi, dan kompetensi holistik siswa di abad ke-21.

***Kata kunci**: Keterampilan Non-Kognitif, Kecakapan Abad 21, Pengembangan Karakter, PAI.*

Abstract

This study aims to reconceptualize non-cognitive skills as key drivers of 21st-century competencies by clarifying their definitions, analyzing their role in adaptive success, and formulating practical recommendations for Islamic Religious Education. This article contributes by offering a synthesized conceptual framework that positions non-cognitive skills as integrative drivers linking cognitive abilities and 4C competencies, addressing the conceptual fragmentation found in previous studies. This research employs a library research design with qualitative descriptive analysis. Data sources were selected based on relevance and credibility, including scholarly articles, policy documents, and prior studies. The analysis was conducted through thematic categorization and conceptual synthesis to identify key patterns and relationships. The findings indicate that non-cognitive skills encompassing intrapersonal aspects (motivation, resilience, self-regulation) and

interpersonal aspects (communication, collaboration) serve as foundational enablers that optimize cognitive performance and support the development of 4C skills. The study also highlights their strategic role within the perspectives of Social Cognitive Theory and Human Capital Theory. The implications suggest that Islamic Religious Education should integrate non-cognitive skill development systematically into curriculum, pedagogy, and school culture. Practical recommendations include the implementation of Social-Emotional Learning, project-based learning, and growth mindset-oriented practices to enhance students' character, adaptability, and holistic competencies in the 21st century.

Keywords: Non-Cognitive Skills, 21st Century Skills, Character Development, Islamic Religious Education.

INTRODUCTION

The increasing complexity of the 21st century has fundamentally reshaped the competencies required for individuals to succeed in both academic and professional domains (Attarang, 2025). Rapid technological advancement, shifting labor market demands, and global interconnectedness have intensified the need for individuals who are not only cognitively competent but also adaptable, resilient, and capable of effective social interaction (Abad et al., 2024). However, despite these evolving demands, educational systems in many contexts continue to prioritize cognitive achievement as the primary indicator of success (Azmi & Dewantoro, 2024). This imbalance has led to a growing concern regarding the limited preparedness of graduates to مواجهة real-world challenges that require more than academic knowledge alone (Benhayoun et al., 2021).

Empirical evidence and educational reports consistently highlight a persistent gap between academic excellence and workplace readiness (Benhayoun et al., 2021). Many graduates demonstrate strong intellectual capabilities, as reflected in high academic scores, yet encounter difficulties when required to collaborate, manage stress, communicate effectively, or solve unstructured problems (Zhang et al., 2022). These challenges point to the insufficient development of non-cognitive skills, which encompass a range of intrapersonal and interpersonal competencies such as motivation, self-regulation, resilience, empathy, and teamwork (Darlis, 2023). As a result, the discourse surrounding educational quality has increasingly shifted toward the importance of balancing cognitive and non-cognitive dimensions of learning.

Despite growing recognition of their importance, the concept of non-cognitive skills remains theoretically fragmented (Nurvahana, 2025). The literature reveals a proliferation of overlapping terms, including soft skills, socio-emotional skills, transversal competencies, and 21st-century skills, which are often used interchangeably without clear conceptual boundaries (Hidayah et al., 2024). This terminological ambiguity not only creates confusion but also hinders the development of a coherent framework for integrating these skills into educational practice (Roshid et al., 2024). Previous studies have contributed valuable insights; however, most tend to focus on specific aspects or adopt empirical approaches

without offering a comprehensive conceptual synthesis (Jamshaid et al., 2025). Consequently, the field still lacks a unified perspective that clearly positions non-cognitive skills within the broader framework of 21st-century competencies (Seker et al., 2024).

This condition reveals several critical research gaps. First, there is a lack of a systematic and integrative conceptual framework that explicitly connects non-cognitive skills with the 4C competencies, critical thinking, communication, collaboration, and creativity, which are widely recognized as essential for 21st-century learning (Sahupala et al., 2025). Second, although non-cognitive skills are closely related to character formation, limited research has explored their integration within the context of Islamic education, which inherently emphasizes moral, spiritual, and ethical development (Cinque et al., 2023). Third, existing literature is largely dominated by empirical and fragmented studies, with insufficient attention given to conceptual synthesis that can provide theoretical clarity and practical direction for educators (Teshome, 2025).

In this regard, Islamic Religious Education offers a unique and strategic context for addressing these gaps. Unlike general education, Islamic Religious Education is inherently oriented toward holistic human development, encompassing intellectual, emotional, social, and spiritual dimensions (Maisarah et al., 2025). This orientation positions Islamic Religious Education as a potentially effective platform for integrating non-cognitive skills into educational practice. However, the absence of a clear conceptual model and structured integration strategy has limited its potential contribution to the development of 21st-century competencies.

Therefore, this study seeks to address these gaps by (1) constructing a comprehensive conceptual framework of non-cognitive skills, (2) synthesizing their relationship with 21st-century competencies, particularly within the 4C framework, and (3) formulating an integrative model along with practical recommendations for their implementation in Islamic Religious Education. Through this approach, the study aims to contribute not only to theoretical development but also to the enhancement of educational practice in responding to contemporary challenges.

METHOD

The research conducted used library research, so the method used in the research was a library study. The special characteristics used as a basis for developing research knowledge include: this research is confronted directly with the data or text presented, not with field data or through eyewitness accounts of events. Researchers only deal directly with sources that already exist in the library or ready-to-use data, as well as secondary data used (Hidayah et al., 2024). The library research process involves reviewing the literature and analyzing relevant topics. Library searches can utilize sources such as journals, books, dictionaries,

documents, magazines, and other sources without conducting field research. The data collection technique used in this study utilizes secondary data, which involves collecting data indirectly through researching the relevant object. The use of secondary data is accountable for its relevance to the use of Augmented Reality-based learning models. After collecting several journals related to the feasibility of Augmented Reality-based learning models, the next step is to analyze the data using descriptive qualitative analysis through literature studies, the results of the analysis are in the form of descriptive data in the form of written sentences and observed behavioral results from the results of research conducted by previous researchers.

RESULTS AND DISCUSSION

Result

Conceptual Synthesis of Non-Cognitive Skills

The analysis of the literature reveals that the concept of non-cognitive skills remains conceptually fragmented, characterized by the widespread use of overlapping terms such as soft skills, socio-emotional skills, and transversal competencies. While previous studies define these constructs from different disciplinary perspectives, ranging from psychology to economics and education, a convergence of meaning can still be identified. Across studies, these terms generally refer to patterns of attitudes, behaviors, and dispositions that influence how individuals manage themselves and interact with others. This fragmentation, however, has contributed to a lack of conceptual clarity, making it difficult to develop a unified framework for integrating non-cognitive skills into educational systems.

Despite these definitional differences, a consistent pattern emerges across the literature regarding the core structure of non-cognitive skills. The majority of studies classify these skills into two main dimensions: intrapersonal and interpersonal competencies. Intrapersonal skills include internal processes such as motivation, self-regulation, resilience, and perseverance, which enable individuals to manage emotions, maintain focus, and persist in the face of challenges. Meanwhile, interpersonal skills encompass the ability to communicate effectively, collaborate with others, demonstrate empathy, and build social relationships. This dual categorization is widely supported across various studies, suggesting a shared foundational understanding despite terminological variations.

The synthesis of findings indicates that non-cognitive skills play a significant role as predictors of long-term success in both academic and professional domains. Research grounded in educational psychology highlights their importance in enhancing learning engagement, self-directed learning, and academic persistence. At the same time, studies from an economic perspective, particularly those influenced by human capital theory, emphasize that investments in non-cognitive skills yield substantial long-term returns, often exceeding those associated with

purely cognitive abilities. This dual recognition across disciplines reinforces the centrality of non-cognitive skills in shaping individual outcomes over time.

This study finds that across studies, non-cognitive skills are consistently positioned as enabling factors that optimize the use and development of cognitive abilities. Rather than functioning independently, non-cognitive skills act as underlying mechanisms that determine how effectively individuals apply their knowledge and intellectual capacities in real-world contexts. For instance, cognitive competence in problem-solving becomes significantly more effective when supported by persistence, adaptability, and emotional regulation. Similarly, knowledge acquisition is more sustainable when driven by intrinsic motivation and supported by self-discipline. Based on this synthesis, the primary finding of this research is that non-cognitive skills should not be viewed merely as complementary or secondary to cognitive abilities. Instead, they should be understood as integrative drivers within the broader competency framework. This perspective shifts the conceptual position of non-cognitive skills from peripheral attributes to foundational elements that activate, sustain, and enhance cognitive performance. By functioning as a bridge between internal dispositions and external competencies, non-cognitive skills play a crucial role in enabling individuals to navigate complex, dynamic, and socially embedded environments characteristic of the 21st century.

To better understand the structural role of non-cognitive skills within the broader competency framework, it is essential to conceptualize how different types of skills are hierarchically related. The literature increasingly suggests that individual competence is not formed through isolated skill sets, but through an interconnected system in which foundational attributes support the development of more complex abilities. In this regard, several studies highlight that non-cognitive skills serve as the underlying base that enables the acquisition and effective application of both basic and advanced competencies.

While cognitive and technical skills are often emphasized in formal education, this study argues that their development is significantly influenced by deeper personal and social capacities. Without essential non-cognitive attributes such as resilience, adaptability, and self-regulation, individuals may struggle to fully utilize their cognitive potential or sustain performance in dynamic environments. Therefore, understanding the hierarchical positioning of these skills is crucial to clarify their functional relationships. The following Figure 1 illustrates a synthesized conceptual hierarchy of competencies, positioning non-cognitive skills as the foundational layer that supports the development of basic cognitive skills and, ultimately, industry-specific or technical expertise.

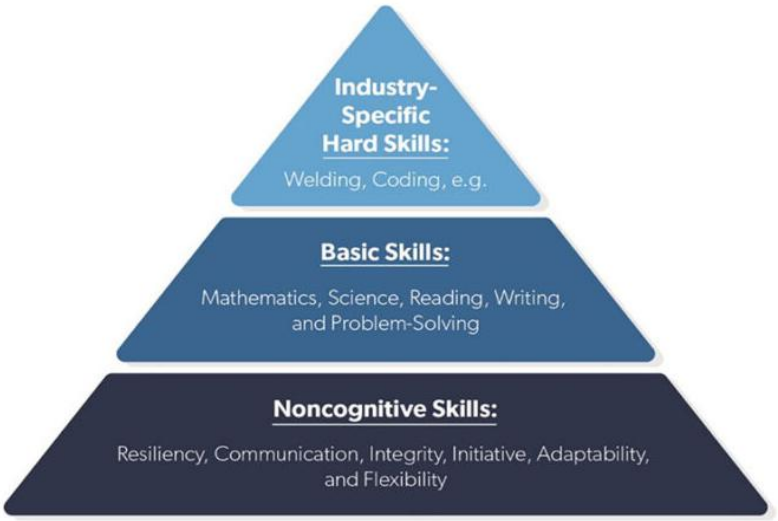

Figure 1. Represents the Hierarchical Structure of Competencies, Where Non-Cognitive Skills form The Foundation

It 's clear that non-cognitive skills like resilience, communication, and integrity are the most fundamental foundation of an individual's competency structure. These skills aren't taught directly in the classroom but develop through experience, encompassing both intrapersonal aspects like motivation and interpersonal aspects like teamwork. The strength of these non-cognitive foundations serves as the foundation for mastering basic skills like reading and writing, ultimately leading to the peak of technical competence or specific hard skills. These thought and behavioral patterns are developed throughout life to generate added value and individual well-being in the face of obstacles through effective reasoning.

Patterns of Relationship between Non-Cognitive Skills and 4C Competencies

The synthesis further reveals a consistent and robust pattern regarding the relationship between non-cognitive skills and 21st-century competencies, particularly within the 4C framework (critical thinking, communication, collaboration, and creativity). Across the reviewed studies, non-cognitive skills are not only associated with these competencies but are also shown to play a mutually reinforcing role in their development. This indicates that the acquisition of 4C skills is not solely dependent on cognitive instruction, but is significantly shaped by underlying personal and social dispositions that influence how individuals engage in learning processes.

More specifically, the literature demonstrates clear functional linkages between particular non-cognitive attributes and specific 4C competencies. Self-regulation, for instance, supports the development of critical thinking by enabling individuals to engage in reflective, disciplined, and goal-oriented reasoning processes. Empathy, as an interpersonal skill, enhances both communication and collaboration by fostering mutual understanding, perspective-taking, and effective interaction within diverse social contexts. Similarly, resilience contributes to

problem-solving and creativity by sustaining effort, encouraging persistence, and enabling individuals to navigate uncertainty and failure constructively. Motivation, on the other hand, acts as a cross-cutting driver that influences engagement across all four competencies, determining the intensity, direction, and persistence of learning behaviors.

Taken together, these patterns suggest that non-cognitive skills function as underlying mechanisms that activate and sustain the development of 21st-century competencies. Thus, across studies, the majority of research consistently demonstrates a positive and significant relationship between non-cognitive skills and the development of 4C competencies. This finding reinforces the argument that efforts to improve 21st-century learning outcomes must go beyond cognitive instruction and explicitly incorporate the development of non-cognitive dimensions.

The synthesis also reveals important variations in how this relationship is conceptualized and implemented across different cultural and educational contexts. In Western educational systems, the development of non-cognitive skills is commonly framed within structured approaches such as Social Emotional Learning (SEL), which emphasizes measurable competencies like self-awareness, emotional regulation, and interpersonal skills. In contrast, many Asian contexts tend to emphasize discipline, perseverance, and collective responsibility, reflecting broader cultural values that prioritize social harmony and group-oriented achievement. Meanwhile, in Islamic education contexts, non-cognitive skills are often embedded within moral and spiritual frameworks, where values such as integrity, empathy, and self-control are developed through religious teachings and practices, although these are not always explicitly conceptualized within modern educational terminology.

These contextual differences indicate that while the positive relationship between non-cognitive skills and 4C competencies is consistently recognized, the conceptual framing, pedagogical strategies, and implementation models vary significantly across systems. This suggests that non-cognitive skills are not culturally neutral constructs, but are shaped by underlying value systems and educational philosophies. Therefore, any attempt to develop an integrative framework must take into account both the universal patterns identified across studies and the contextual variations that influence how these skills are understood and applied in practice. Students are encouraged to actively participate, interact, and construct knowledge through meaningful and contextual learning experiences. Teachers are required to design learning that is innovative, adaptive, and oriented towards developing students' character and life skills, as shown in Figure 2.

Figure 2. Llustrates the Interaction Between Non-Cognitive Skills and 4C Competencies

Strategies for developing non-cognitive skills in Islamic religious education cannot be implemented through one-way instruction; they must be integrated into the entire school ecosystem. The following is a comprehensive development strategy, as showen on Figure 3.

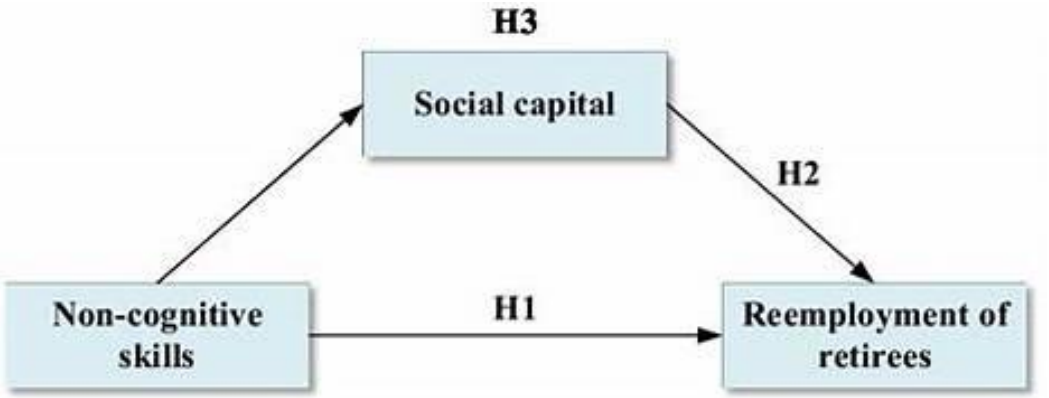

Figure 3. Demonstrates The Ecosystem of Implementation Within Educational Settings

The integration of non-cognitive skills into the Islamic religious education ecosystem serves as a primary foundation that directly influences an individual's future success. Within this framework, non-cognitive skills not only stand alone but also serve as triggers for the formation of strong social capital through social interaction, empathy, and ethical communication. Figure 3 explains that this built social capital then becomes a crucial bridge (paths H3 and H2) that facilitates individuals to remain relevant and highly competitive, even during life transitions such as reemployment.

This synergy between personal skills and social capital enables more effective resolution of complex social problems and navigation of contemporary challenges. Thus, integrated character development and life skills will create

religious communities that are not only theologically intelligent but also socially empowered. This relationship emphasizes that long-term success is the result of a dynamic interaction between personal qualities, the social environment, and ongoing adaptability.

Discussion

While previous studies argue that non-cognitive skills serve primarily as complementary factors to cognitive abilities, this study advances a different position by suggesting that non-cognitive skills function as primary drivers of competency development (Net, 2023). This interpretation is supported by a growing body of literature in educational psychology and human development, which emphasizes that cognitive performance is highly dependent on internal regulatory processes such as motivation, persistence, and emotional control (Sirait & Nasution, 2024). For instance, studies on self-regulated learning consistently demonstrate that learners with strong self-regulation achieve better academic outcomes, not because they possess higher intelligence, but because they are able to manage their learning processes more effectively (Farhaty et al., 2025).

This perspective is further reinforced by research highlighting the role of socio-emotional competencies in shaping real-world performance (Rodrigues et al., 2023). While cognitive knowledge provides the "what" of learning, non-cognitive skills determine the "how" and "why" individuals apply that knowledge in complex and dynamic environments (Realitawati et al., 2024). In line with this, several studies have shown that students with similar cognitive abilities often display significantly different performance levels due to variations in motivation, resilience, and social skills (Fujiwaty & Harida, 2025).

Therefore, this study argues that non-cognitive skills are not peripheral attributes, but rather structural components that activate, regulate, and sustain cognitive functioning (Rodrigues et al., 2023), (Panca & Parisu, 2025). This implies that cognitive ability without self-regulation may lead to inconsistent performance, knowledge without empathy may limit social applicability, and technical skills without motivation may reduce long-term adaptability (Mantau & Talango, 2023). Such findings support the argument that non-cognitive skills should be repositioned from supplementary elements to foundational drivers within the competency framework.

The literature on non-cognitive skills can generally be categorized into three dominant perspectives: psychological, economic, and educational (Suleman, 2024). The psychological perspective primarily focuses on individual traits and internal processes, such as self-efficacy, mindset, and emotional regulation (Ahwan & Basuki, 2023). Research in this domain emphasizes how these internal factors influence behavior, learning engagement, and achievement outcomes (Tekad & Pebriana, 2023). For example, studies on growth mindset demonstrate that individuals who

believe in the malleability of their abilities are more likely to persist in the face of challenges and achieve higher levels of success.

Meanwhile, the educational perspective focuses on how non-cognitive skills can be developed through curriculum design, pedagogy, and learning environments (Yolanda et al., 2024). Approaches such as Social Emotional Learning (SEL) and project-based learning have been widely promoted as effective strategies for fostering these competencies (Erlangga & Suratman, 2025). However, despite these contributions, the literature tends to treat these perspectives in isolation (Taufiqurrahman, 2023). Psychological studies often overlook institutional and pedagogical contexts, economic studies prioritize outcomes over processes, and educational studies focus on implementation without fully integrating theoretical foundations (Rusmita & Fitriyeni, 2024). This study addresses this fragmentation by proposing a unified and integrative framework that connects internal psychological processes, social and pedagogical interactions, and long-term developmental outcomes. By bridging these perspectives, the study provides a more comprehensive understanding of how non-cognitive skills operate across different levels of analysis.

CONCLUSION AND SUGGESTION

This study demonstrates that non-cognitive skills should be repositioned from complementary attributes to core drivers of 21st-century competencies, as they function as activation mechanisms that determine how cognitive abilities are utilized in complex, real-world contexts. Across the literature, a consistent pattern emerges showing that intrapersonal and interpersonal dimensions of non-cognitive skills systematically shape the development of 4C competencies, although their conceptualization and implementation vary across educational and cultural settings. The key contribution of this study lies in proposing an integrative framework that connects psychological processes, educational practices, and long-term developmental outcomes, while also highlighting that Islamic Religious Education provides a distinctive value-based system that strengthens the internalization of these skills. Thus, the synthesis suggests that effective competency development in the 21st century depends not merely on cognitive mastery, but on the strategic integration of non-cognitive capacities as foundational elements of learning and human development.

Based on these findings, future research should move beyond descriptive approaches by empirically testing the proposed conceptual model across different educational contexts, particularly within Islamic education settings. There is also a need to develop context-sensitive instruments and pedagogical frameworks that explicitly integrate non-cognitive skills into curriculum design and assessment systems. For practitioners, educators are encouraged to adopt holistic learning approaches that combine cognitive instruction with structured development of self-

regulation, empathy, and resilience, supported by value-based practices. At the policy level, educational systems should prioritize the systematic integration of non-cognitive skills as measurable learning outcomes to ensure that students are not only academically competent but also adaptable, socially responsible, and capable of navigating the complexities of the 21st century.

REFERENCES

Abad, K., Sridana, N., Sukarma, I.K., Samsuri, T., Gunawan, R., Studi, P., Matematika, P., Mataram, U., Studi, P., Matematika, P., & Mandalika, UP (2024). Analysis of prospective teachers' abilities in compiling student worksheets that build 21st-century skills. *Bioscientist: Scientific Journal of Biology* , *12* (2), 1692–1703. https://doi.org/https://doi.org/10.33394/bioscientist.v12i2.12472

Ahwan, MTR, & Basuki, S. (2023). Improving Students' Collaborative Skills through Physical Fitness Activities Using the Project Based Learning (PjBL) Model at SMA Negeri 3 Banjarbaru. *Journal of Recreational Health Education* , *9* (1), 106–119. https://doi.org/10.5281/zenodo.7592832

Andi M. Darlis, BA (2023). *Teacher Professional Development* (IV). CV. Amanah.

Attarang, T. (2025). Future Human Skills: A Conceptual Framework for Developing 21st Century Competencies. *Journal of Applied Humanities Studies,* 3(2), 33-57. https://doi.org/10.65680/jahs.v3i2.7828

Azmi, DT, & Dewantoro, MH (2024). Study of The Integration of Islam and Science: The Role of Islamic Education Towards The Era of The Industrial Revolution 5. 0. *FIAI-UII Student Journal, at-Thullab* , *6* (1), 1556–1567. https://doi.org/10.20885/tullab.vol6.iss1.art7

Benhayoun, L., & Lang, D. (2021). Does higher education properly prepare graduates for the growing artificial intelligence market? Gaps' identification using text mining. *Human Systems Management,* 40(5), 639-651. https://doi.org/10.3233/HSM-211179

Cinque, Maria, Carretero, Stephanie, Napierala, & Joanna. (2023). Non-cognitive skills and other related concepts: Towards a better understanding of similarities and differences. *European Commission, Joint Research Center (JRC), Seville* . https://doi.org/https://hdl.handle.net/10419/236541 Standard-Nutzungsbedingungen:

Erlangga, J., & Suratman, A. (2025). Smart parenting with a growth mindset; guiding children to dare to fail and get back up. *Didactics: Scientific Journal of Elementary School Teacher Training and Education, Faculty of Teacher Training and Education, Mandiri University* , *11* (4), 237–249. https://doi.org/https://doi.org/10.36989/didactics.v11i04.10679

Farhaty, M., Masita, & Mulyadin, W. (2025). Building a Growth Mindset Through Descriptive Feedback: A Qualitative Study of Islamic Jurisprudence Learning. *Pendas: Scientific Journal of Elementary Education* , *10* (04), 452–463. https://doi.org/https://doi.org/10.23969/jp.v10i04.39257

Fujiwaty, & Harida, ES (2025). 4C Skills in 21st Century Learning in Elementary

Schools. *Al-Ibroh Journal of Education and Teacher Training* , *2* (2), 159–174. https://doi.org/https://doi.org/10.3724/alibroh.

Hidayah, S., Mailani, E., Sitohang, R., & Gandamana, A. (2024). Development of Mathematics Learning Media for the Area of Flat-Sided Solids Based on Augmented Reality Assisted by Unity 3D to Improve Learning Outcomes of Fifth Grade Elementary School Students. *Innovative: Journal of Social Science Research Volume* , *4* (5), 95–111. https://doi.org/https://doi.org/10.31004/innovative.v4i5.14781

Jamshaid, S. (2025). Cognitive Effects of Large Language Models: An Empirical Study of Memory Retention, Reasoning Strategies, and Critical Thinking among Students and Professionals at the University of Gujrat, Pakistan. *Academia International Journal for Social Sciences.* 4(3). https://doi.org/10.63056/acad.004.03.0893

Maisarah, N., & Nazariah, S. D. (2025). Problem-Based Learning Method to Improve Students' Critical Thinking Skills in Islamic Religious Education Learning at SD Negeri 24 Banda Aceh. *Etnopedagogi. Jurnal Pendidikan Dan Kebudayaan,* 2, 350-356. https://doi.org/10.62945/etnopedagogi.v2i1.617

Mantau, BAK, & Talango, SR (2023). Integrating 21st-century skills in the learning process (literature review). *IRFANI: Journal of Islamic Education* , *19* (1), 86–107. https://doi.org/http://journal.iaingorontalo.ac.id/index.php/ir

Net, WWWP (2023). Findings and Implications of Social Emotional Learning (SEL) in Paternalistic Culture in Elementary Schools: A Systematic Literature Review. *Journal of Education and Instruction* , *1* (3), 151–158. https://doi.org/https://doi.org/10.47750/pegegog.13.03.16

Nisa, R. (2024). Islamic Primary School Teachers' Perceptions on Digital Technology-Based Learning. *Jurnal Cendekia Media Komunikasi Penelitian Dan Pengembangan Pendidikan Islam,* 16(01), 162-171. https://doi.org/10.37850/cendekia.v16i01.654

Nurvahana. (2025). Effective Strategies for Integrating Social and Emotional Learning in 21st Century Learning. *Jurnal Pendidikan Tuntas* , *3* (2), 70–75. https://doi.org/10.33394/bioscientist.v12i2.12472

Panca, IG, & Parisu, CZL (2025). Implementation of an immersive learning approach to improve elementary school students' critical thinking skills. *Journal of Humanities, Social Sciences, and Education* , *1* (7), 32–43. https://doi.org/https://doi.org/10.64690/jhuse.v1i7.314

Realitawati, Ikrom, FD, Herawan, E., & Kadarsah, D. (2024). Implementation of 4C skills in 21st-century learning in elementary schools. *Muallimuna: Jurnal Madrasah Ibtidaiyah* , *10* (1), 22–32. https://doi.org/10.31602/muallimuna.v10i1.15533

Rifky, S., Putra, J. M., Ahmad, A. T., Widayanthi, D. G. C., Abdullah, G., Sunardi, S., & Syathroh, I. L. (2024). *Pendidikan yang Menginspirasi: Mengasah Potensi Individu*. Yayasan Literasi Sains Indonesia

Rodrigues, F., Figueiredo, N., Jacinto, M., & Monteiro, D. (2023). Education sciences

Social-Cognitive Theories to Explain Physical Activity. *Journal of Educational Sciences* , *13* (122), 1–17. https://doi.org/https://doi.org/10.3390/educsci13020122

Roshid, M. M., & Haider, M. Z. (2024). Teaching 21st-century skills in rural secondary schools: From theory to practice. *Heliyon*, 10(9). https://doi.org/10.1016/j.heliyon.2024.e30769

Rusmita, S., & Fitriyeni. (2024). Implementation of the independent curriculum during the transition from K13 to the independent curriculum in elementary schools. *ELSE (Elementary School Education) Journal* , *8* (3), 7–12. https://doi.org/http://dx.doi.org/10.30 651/else.v8i3.24477

Sahupala, ON, Sunusi, Z., Atiqah, N., Sulhan, A., Sari, PN, Parham, PM, & Fauzan, M. (2025). Non-Cognitive Assessment for Character Development and Student Potential at MA DDI Baruga, Majene Regency. *Room of Civil Society Development* , *4* (5), 802–815. https://doi.org/https://doi.org/10.59110/rcsd.688

Seker, O., Kwon, K., & Kocak, O. (2025). Exploring researchers' artificial intelligence (AI) literacy: The mediating role of digital literacy and data literacy between 21st century skills and AI literacy. *Information Development*. https://doi.org/10.1177/02666669251336368

Sirait, AA, & Nasution, MIP (2024). The Effectiveness of the TikTok Platform as a Digital Literacy-Based Islamic Education Learning Medium. *Dirosat: Journal of Islamic Studies* , *9* (1), 83. https://doi.org/10.28944/dirosat.v9i1.1732

Suleman, MA (2024). Improving Students' Communication Skills through the Implementation of Experiential Learning. *Journal of Teacher Scientific Work* , *9* (3), 1530–1538. https://doi.org/https://doi.org/10.51169/ideguru.v9i3.1101

Tekad, & Pebriana, R. (2023). The Effect of the Team-Based Project Learning Model on Communication Skills and Collaboration Skills in Indonesian Language Courses. *Journal of PTK and Education* , *7* (2), 134–141. https://doi.org/10.18592/ptk.v7i2.5445 Journal

Teshome, S. (2025). Trends, Challenges, and Opportunities in the Integration of 21st Century Skills into Exit Exams: A Systematic Literature Review. *International Journal of Education, Management, and Technology.* 3(2); 525-536. https://doi.org/10.58578/ijemt.v3i2.5624

Theory, JP, Thinking, K., Learning, H., Malang, UN, & Malang, UN (2025). *The Effect of Challenge Based Learning Model on Critical Thinking Skills and Student Learning Outcomes on Natural Disaster Material for Grade V Elementary School* . *10* (3). https://doi.org/10.17977/jptpp.v10i3.25626

Ufia, S., Nugroho, AD, & Wahjoedi, T. (2024). Improving Student Competence through Internship Programs as an Effort to Improve Hard Skills and Soft Skills. *Journal of Knowledge and Collaboration* , *1* (2), 39–47. https://doi.org/https://doi.org/10.59613/97dmmj73

Yolanda, S., Sari, SM, & Ismail, I. (2024). The role of student organizations in building leadership character and improving soft skills. *Scientific Journal of Elementary Education*, 9 (4), 361–373.

https://doi.org/https://doi.org/10.23969/jp.v9i04.21514

Zhang, J., Fatehiboroujeni, S., Ford, M., & Burkholder, E. (2022). Impact of decision-making in heat transfer courses on students' ability to solve authentic problems. *In 2022 IEEE Frontiers in Education Conference (FIE) (1-9). IEEE.* https://doi.org/10.1109/FIE56618.2022.9962389