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# Implementation of Transdisciplinary Approaches in Islamic Education to Face Contemporary Global Challenges

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***ABSTRACT***

*This research aims to explore the application of a transdisciplinary approach in Islamic education, with a focus on its integration with contemporary global challenges, such as social, environmental, and technological issues. This study uses a qualitative method with a literature study approach. Data is collected from a variety of secondary sources, such as books, journal articles, and official documents. Data analysis was carried out thematically to find patterns and relationships between transdisciplinary approaches and Islamic education. The focus of the research is the theoretical exploration of transdisciplinary education in the Islamic context. The findings show that the transdisciplinary approach at Sakinah Circle successfully integrates various disciplines such as science, mathematics, history, and language with Qur'anic values. Each theme taught, such as "Water" and "Samawat", provides a holistic learning experience, combining scientific, spiritual, and ethical dimensions. This approach prepares students to face contemporary challenges by fostering intellectual and spiritual development simultaneously. This research highlights the important role of a transdisciplinary approach in modernizing Islamic education to confront global issues such as environmental sustainability and social inequality. The study also demonstrates the need for institutional support in implementing this approach, as well as suggesting that transdisciplinary learning can enhance critical thinking skills, creativity, and collaboration in the context of Islamic education. This research makes an original contribution by linking the transdisciplinary approach to Islamic education, emphasizing its potential in bridging the gap between traditional religious teachings and the demands of the 21st century. This research offers a new perspective on how Islamic education can evolve to face global challenges while maintaining its core values.*

*Keywords: Transdisciplinary education; Islamic education; global challenges; Sakinah Circle; Holistic learning*


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## INTRODUCTION

The current global education system is faced with various challenges that affect its effectiveness and accessibility. One of the main issues is the gap between traditional and modern teaching methods. Many educators still rely on traditional teaching strategies that are often less relevant to 21st-century needs, such as the development of critical thinking skills and creativity [1]. On the other hand, technological developments and global changes, such as economic polarization and climate change, demand the modernization of education systems to prepare individuals for an increasingly dynamic labor market [2]. Rapid changes in the social, economic, and technological world mean educators have to adapt quickly, often without enough time for strategic long-term planning, leaving the skills taught at risk of becoming obsolete.

Islamic education also faces a variety of unique and complex challenges in different regions and cultural contexts. In Indonesia, one of the main problems is the integration of the national curriculum with local and global needs, as well as the gap between traditional madrassas and public schools [3]. Meanwhile, in Pakistan, rural areas experience limited educational infrastructure and persistent gender inequality, hindering access to quality Islamic education. In India, Islamic educational institutions are faced with technological shortages and social conflicts, especially in areas experiencing interreligious tensions between Muslims and Hindus [4]. This challenge has been further exacerbated by globalization, which has brought structural difficulties and weakened social capital in some Muslim-majority regions, particularly in Indonesia [5].

The COVID-19 pandemic has also exacerbated the need for Islamic education to quickly adapt to the digital learning environment. The abrupt switch to distance learning revealed a technology gap and a lack of teacher readiness, leading to problems such as low student engagement and rising dropout rates [6]. In many cases, online learning strategies are inadequate, so a creative and student-centered approach is needed to maintain educational standards. In addition, the reliance on social media and digital platforms during the pandemic raised concerns about exposure to extremist content, highlighting the importance of moderate Islamic education as well as parental supervision [7]. As a result, Islamic educational institutions must continue to modernize their pedagogical and technological tools to remain relevant in an increasingly connected and digital world.

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[1] C Tripon, 'Challenges of Teaching - Personalized Students Learning by Using Video Tools to Improve Thinking Skills', in *Proceedings of the International Conference on Virtual Learning*, 2020, pp. 159–65.

[2] D G Dhanarajan, 'Partnerships for Change', in *Leadership for 21st Century Learning: Global Perspectives from International Experts*, 2013, pp. 177–86, doi:10.4324/9781315042329-24.

[3] A Rohman and others, 'Challenges in Islamic Education Curriculum Development: A Comparative Study of Indonesia, Pakistan, and India', *International Journal of Learning, Teaching and Educational Research*, 23.6 (2024), pp. 504–23, doi:10.26803/ijlter.23.6.23.

[4] Rohman and others.

[5] M Tolchah and M A Mu'ammar, 'Islamic Education in the Globalization Era; Challenges, Opportunities, and Contribution of Islamic Education in Indonesia', *Humanities and Social Sciences Reviews*, 7.4 (2019), pp. 1031–37, doi:10.18510/hssr.2019.74141.

[6] S N Arim and others, 'Navigating Educational Turbulence: A Systematic Literature Review on Challenges Faced by Islamic Education Amid the Pandemic', in *Studies in Systems, Decision and Control*, 2024, DXXXVII, 663–80, doi:10.1007/978-3-031-62106-2_50.

[7] Susanto Susanto and Arik Dwijayanto, 'Student's Attachment to Social Media and the Challenges of Moderate Islamic Education (Implementation During the Covid-19 Pandemic)', *Jurnal Ilmiah Peuradeun*, 10.2 (2022), p. 331, doi:10.26811/peuradeun.v10i2.728.

The transdisciplinary education approach has emerged as one of the solutions that can answer the challenges faced by the global education system, including Islamic education. Transdisciplinary education allows for the integration of complementary disciplines, such as religion, science, technology, and humanities, to create a more comprehensive and holistic approach. In the context of Islamic education, this approach not only strengthens religious understanding, but also equips students with critical, creative, and relevant skills to the needs of the modern world. By combining various scientific perspectives, transdisciplinary education can bridge the gap between traditional methods and modern demands, as well as help Islamic educational institutions better adapt to technological developments and global socio-economic dynamics.

Research on transdisciplinary approaches in education has developed significantly, but there are still some shortcomings that need to be answered by further research. Based on the literature review, previous research can be categorized into three main groups: improved learning outcomes, curriculum design, and implementation challenges and opportunities.

First, research related to improved learning outcomes emphasizes how transdisciplinary approaches are able to improve students' critical thinking skills, creativity, and problem-solving skills. Several studies show that this approach is effective in developing 21st-century skills, such as communication, collaboration, and systemic thinking [8]. However, this study has not discussed in detail how these results can be applied in the context of Islamic education, especially in areas with limited educational infrastructure challenges.

Second, in the aspect of curriculum design and pedagogy, several studies underline the importance of project-based learning and inquiry-based learning as effective strategies in a transdisciplinary approach. The integration of technology and innovative teaching methods is also considered important to enrich the curriculum and make learning more relevant to today's challenges [9]. However, there is still a gap in this study related to how the transdisciplinary curriculum can be designed holistically, especially to integrate Islamic values with the development of modern science.

Third, on the challenges and opportunities of implementation, many studies highlight the obstacles faced by educational institutions in adopting a transdisciplinary approach, such as lack of institutional support, inadequate assessment methods, and unclear roles of teachers as facilitators of active learning [10]. This challenge is relevant to Islamic education, where madrassas often have limited resources and infrastructure to implement more complex approaches. In addition, although many studies mention the importance of skill development through this approach, more specific studies regarding the impact of transdisciplinary approaches on the formation of professional identity in Islamic education are still lacking.

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[8] M Suchitra and others, 'Transdisciplinary Theories and Models for Understanding Learning Outcomes in Higher Education', in *Transdisciplinary Approaches to Learning Outcomes in Higher Education*, 2024, pp. 1–42, doi:10.4018/979-8-3693-3699-1.ch001; M U Tariq, 'Enhancing Students and Learning Achievement as 21st-Century Skills through Transdisciplinary Approaches', in *Transdisciplinary Approaches to Learning Outcomes in Higher Education*, 2024, pp. 220–57, doi:10.4018/979-8-3693-3699-1.ch007.

[9] F S Tortoriello and I Veronesi, 'Internet of Things to Protect the Environment: A Technological Transdisciplinary Project to Develop Mathematics with Ethical Effects', *Soft Computing*, 25.13 (2021), pp. 8159–68, doi:10.1007/s00500-021-05737-x.

[10] M G Arnold, 'The Challenging Role of Researchers Coping with Tensions, Dilemmas and Paradoxes in Transdisciplinary Settings', *Sustainable Development*, 30.2 (2022), pp. 326–42, doi:10.1002/sd.2277; N Budwig and A J Alexander, 'A Transdisciplinary Approach to Student Learning and Development in University Settings', *Frontiers in Psychology*, 11 (2020), doi:10.3389/fpsyg.2020.576250.

These shortcomings show that the transdisciplinary approach still needs more in-depth research, especially in the context of Islamic education. This study seeks to answer this gap by exploring how transdisciplinary approaches can be effectively applied in Islamic education to answer existing global challenges.

## RESEARCH METHOD

This research focuses on transdisciplinary Islamic education as the main unit of analysis. Islamic education is seen from the perspective of applying a transdisciplinary approach in overcoming the challenges of modern education in Islamic educational institutions. The subjects studied include the concept of Islamic education, transdisciplinary approaches, and challenges faced by Islamic educational institutions in the context of globalization and technological development. This study examines how a transdisciplinary approach can provide solutions to these issues.

This study uses a qualitative method with a library research approach . The qualitative approach was chosen because this research aims to explore theoretical concepts and explore transdisciplinary ideas in Islamic education through comprehensive literature analysis. Literature studies are considered appropriate because they can explore various existing academic perspectives related to Islamic and transdisciplinary education, and provide a strong theoretical foundation for compiling educational models that are relevant to contemporary challenges.

The data sources used in this study come from various secondary literature, including books, scientific journal articles, conference papers, and official documents. The literature taken includes classical and contemporary works that discuss Islamic education, transdisciplinary approaches, and educational challenges in the modern era. This data is accessed through physical and digital libraries, both from international and national scientific journals.

The data collection process is carried out by searching literature relevant to the research topic. The selected literature is then critically evaluated based on its credibility, accuracy, and relevance to the research theme. These literatures are then collected, analyzed, and organized based on key themes that have been determined, such as the definition of transdisciplinary education, the historical roots of transdisciplinary education in Islam, and its challenges and implementation in Islamic educational institutions.

The collected data is analyzed using thematic analysis, where various theories and concepts found in the literature are compared and linked to each other. This analysis aims to find patterns and relationships between transdisciplinary concepts and Islamic education, as well as how these approaches can be applied practically to overcome the challenges of modern education. The results of the analysis are systematically arranged and explained in the discussion section to provide a comprehensive overview of the application of transdisciplinary in Islamic education.

## FINDINGS AND DISCUSSION

### Definition and Concept of Transdisciplinary

Transdisciplinary education is an educational approach that integrates methods, tools, concepts, and theories from different disciplines to address complex problems holistically. This approach goes beyond traditional academic boundaries by combining academic and non-academic

knowledge to achieve a more thorough understanding of an issue [11]. In other words, transdisciplinary education aims to not only bridge various disciplines, but also engage practical knowledge from the real world to create more effective solutions.

One of the key characteristics of transdisciplinary education is the holistic integration of knowledge from different disciplines to create an integrated approach to problem-solving. It includes a more comprehensive and systematic approach to understanding complex issues, which requires cross-disciplinary collaboration as well as the incorporation of practical and theoretical knowledge [12]. In addition, transdisciplinary education emphasizes systemic thinking, where learners are invited to understand and deal with problems through a broader and deeper framework of thinking [13]. Collaborative learning is also a key element, where interaction between individuals from different disciplines is facilitated to encourage collective learning and cross-disciplinary communication skills [14].

To understand how transdisciplinary education differs from interdisciplinary and multidisciplinary approaches, it is important to define each term as well as highlight its unique characteristics. Multidisciplinary education involves several disciplines working independently in dealing with various aspects of a broad problem. Each discipline maintains its own methodology and perspective, with collaboration limited to sharing results without in-depth integration of methods or theories[15]. For example, in medical education, departments such as otolaryngology and pathology teach their subjects separately within the same framework, but do not combine each other' s [16]perspectives .

Interdisciplinary education integrates methods and perspectives from various disciplines to address a common problem. This approach requires a higher level of integration and cooperation between the disciplines, with the aim of creating new knowledge through the incorporation of disciplinary boundaries [17]. For example, engineering and psychology students work together to understand human development from a technical and behavioral perspective, where each field contributes complementary insights [18]. In interdisciplinary education, the contribution of the discipline tends to be more focused on the creation of new synergies, but is still within the defined academic boundaries.

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[11] A Ertas and others, 'Shifting Engineering Education from Disciplinary to Transdisciplinary Practice', *International Journal of Engineering Education*, 31.1 (2015), pp. 94–105; J T Klein, 'Learning in Transdisciplinary Collaborations: A Conceptual Vocabulary', in *Transdisciplinary Theory, Practice and Education: The Art of Collaborative Research and Collective Learning*, 2018, pp. 11–23, doi:10.1007/978-3-319-93743-4_2.

[12] M W C Vereijken and others, '"Undisciplining" Higher Education without Losing Disciplines: Furthering Transformative Potential for Students', *Higher Education Research and Development*, 42.7 (2023), pp. 1762–75, doi:10.1080/07294360.2022.2156482.

[13] Klein.

[14] Klein.

[15] R Kveraga and S B Jones, 'Improving Quality Through Multidisciplinary Education', *Anesthesiology Clinics*, 29.1 (2011), pp. 99–110, doi:10.1016/j.anclin.2010.11.004.

[16] I S Atta and R A Alzahrani, 'Perception of Pathology of Otolaryngology-Related Subjects: Students' Perspective in an Innovative Multidisciplinary Classroom', *Advances in Medical Education and Practice*, 11 (2020), pp. 359–67, doi:10.2147/AMEP. S256693.

[17] A C Sparkes and B Smith, 'Interdisciplinary Connoisseurship in Sport Psychology Research', in *Routledge International Handbook of Sport Psychology*, 2016, pp. 581–88.

[18] S D P Panciera, B B R Valverde, and A P S Jurdi, 'Human Development and Interdisciplinary Education: The Confluence between Psychology and Occupational Therapy Courses', *Interface: Communication, Health, Education*, 25 (2021), pp. 1–12, doi:10.1590/interface.200208.

In contrast, transdisciplinary education goes further than the integration of disciplines, creating a holistic approach that goes beyond traditional boundaries, with a focus on real-world problem-solving. This approach involves not only interdisciplinary collaboration, but also includes non-academic stakeholders to confront complex social issues. Transdisciplinary education encourages practical involvement from various parties, including local communities, to jointly devise more relevant and comprehensive solutions [19]. An example of its implementation is a project that involves students, lecturers, and community members working together to address sustainability challenges [20].

The main difference between these three approaches lies in the level of integration and their focus. Multidisciplinary education operates with the contribution of parallel disciplines without integration. Interdisciplinary education combines various disciplines to create new combined outcomes. Meanwhile, transdisciplinary education takes a more holistic approach by engaging academic and non-academic stakeholders, as well as emphasizing real problem-solving through practical and theoretical integration [21]. In the context of transdisciplinary education, the primary goal is to solve complex real-world problems with a direct impact on society, while interdisciplinary and multidisciplinary approaches tend to be more focused on specific academic or research outcomes.

Thus, while multidisciplinary and interdisciplinary approaches make a major contribution to the development of knowledge, transdisciplinary approaches transcend academic boundaries to integrate theory and practice in solving complex real-world problems, making them more flexible and responsive to contemporary global challenges [22].

The transdisciplinary approach in education is increasingly recognized for its relevance due to its potential in improving learning outcomes and preparing students for complex real-world challenges. This approach breaks down traditional academic barriers, allowing for a more integrated understanding of complex problems. By combining knowledge from different disciplines, the transdisciplinary approach encourages critical thinking, creativity, and innovation among students [23].

In addition, transdisciplinary education also plays an important role in the development of 21st-century skills, such as critical thinking, creativity, communication, and collaboration. Through project-based learning strategies and inquiry-based learning, students are not only encouraged to think deeply, but also to work closely with various stakeholders to achieve common goals. This method has proven to be effective in helping students develop the skills needed to face future challenges [24].

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[19] J Godemann, 'Knowledge Integration: A Key Challenge for Transdisciplinary Cooperation', *Environmental Education Research*, 14.6 (2008), pp. 625–41, doi:10.1080/13504620802469188.

[20] S Kubisch and others, 'From Transdisciplinary Research to Transdisciplinary Education-the Role of Schools in Contributing to Community Well-Being and Sustainable Development', *Sustainability (Switzerland)*, 13.1 (2021), pp. 1–13, doi:10.3390/su13010306.

[21] Y K K Rajnath, 'Institutional Support and Leadership for Transdisciplinary Education', in *Transdisciplinary Approaches to Learning Outcomes in Higher Education*, 2024, pp. 296–326, doi:10.4018/979-8-3693-3699-1.ch009.

[22] T Block and others, 'Understanding Urban Sustainability from Mode 2 Science and Transdisciplinary Education: How Master Thesis Ateliers of the Ghent Stadsacademie Tackle Wicked Issues', *Environment, Development and Sustainability*, 2022, doi:10.1007/s10668-022-02657-0.

[23] R Kumar and others, *Transdisciplinary Teaching and Technological Integration for Improved Learning: Case Studies and Practical Approaches*, *Transdisciplinary Teaching and Technological Integration for Improved Learning: Case Studies and Practical Approaches*, 2024, doi:10.4018/979-8-3693-8217-2; Suchitra and others.

[24] B Lavrinoviča, 'Transdisciplinary Learning: From Transversal Skills to Sustainable Development', *Acta Paedagogica Vilnensia*, 47 (2021), pp. 93–107, doi:10.15388/ActPaed.2021.47.7; Tariq.

The relevance of transdisciplinary education also lies in its application in real-world experience. This approach involves students in projects related to real challenges in society, thus making the learning process more meaningful and impactful. It is particularly beneficial in engineering and management, where students learn to address social, economic, and environmental challenges in a sustainable manner. An example is the application of a transdisciplinary approach in engineering education that teaches students not only technical skills but also relevant non-technical skills to address complex societal problems [25].

However, the successful implementation of transdisciplinary education requires strong institutional support and visionary leadership. Educational institutions must be able to embed this approach into institutional frameworks, curriculum design, and teacher development. Without this support, the implementation of this approach will be difficult to sustain. Therefore, institutions need to ensure the existence of supportive facilities, as well as the capacity building of educators to encourage transdisciplinary approaches in the classroom [26].

Despite facing several challenges, such as complex curriculum design and poorly established assessment methods, the opportunities offered by transdisciplinary education in improving educational outcomes and student engagement are significant. Several successful initiatives have demonstrated the practical benefits and transformative potential of this approach in shaping graduates who are innovative and able to adapt to the challenges of the modern world [27].

The transdisciplinary approach in Islamic education is an area that needs to be developed further, where the integration of various disciplines is used to address complex educational and social issues. One of the key benefits of this approach is its ability to integrate socio-cultural and scientific contexts into Islamic education. By combining tradition and modernity, an open and innovative educational model can be created, which not only maintains Islamic values but also prepares learners to face the challenges of the modern world [28].

This approach also involves neuroscience-based models, which have shown great potential in modernizing Islamic educational curricula and making them more relevant to contemporary issues. The integration of neuroscience in Islamic education allows for innovative educational practices and even results in widely recognized intellectual property rights. An example is the use of neuroscience in Islamic education in Yogyakarta, which highlights how this approach can support the development of a generation of millennials who are highly competitive in science[29].

In addition, there is an increasingly urgent need to apply interdisciplinary and transdisciplinary

[25] S Gröschl and X Pavie, 'Transdisciplinarity Applied to Management Education: A Case Study', *Journal of Education for Business*, 95.7 (2020), pp. 451–57, doi:10.1080/08832323.2019.1671781; N Wognum and others, 'Transdisciplinary Systems Engineering: Implications, Challenges and Research Agenda', *International Journal of Agile Systems and Management*, 12.1 (2019), pp. 58–89, doi:10.1504/IJASM.2019.098728.

[26] Rajnath.

[27] I Salite and others, 'Sustainability from the Transdisciplinary Perspective: An Action Research Strategy for Continuing Education Program Development', *Journal of Teacher Education for Sustainability*, 18.2 (2016), pp. 135–52, doi:10.1515/jtes-2016-0020; Kumar and others.

[28] I Ruslan and M A Irham, 'The Role of Cultural Literacy and Peace Education in the Harmonization of Religious Communities', *Journal of Social Studies Education Research*, 13.3 (2022), pp. 174–204.

[29] Suyadi Suyadi and Hendro Widodo, 'Millennialization of Islamic Education Based on Neuroscience in the Third Generation University in Yogyakarta Indonesia', *QIJIS (Qudus International Journal of Islamic Studies)*, 7.1 (2019), p. 173, doi:10.21043/qijis.v7i1.4922; Suyadi, Zalik Nuryana, and Niki Alma Febriana Fauzi, 'The Fiqh of Disaster: The Mitigation of Covid-19 in the Perspective of Islamic Education-Neuroscience', *International Journal of Disaster Risk Reduction*, 51 (2020), p. 101848, doi:10.1016/j.ijdrr.2020.101848.

methods in Islamic education in order to create a more holistic understanding of religion that is relevant to the modern context. This includes integrating the natural, social, and cultural sciences in one connected and well-rounded educational framework. This approach allows learners to see the relationship between religious science and scientific and social development, which is important in facing a variety of complex global challenges [30].

Environmental education can also be improved through a transdisciplinary approach in Islamic education. By combining creative imagination with religious teachings, students can be fostered to have concern for the environment. The application of this approach not only increases environmental awareness among learners, but also promotes their active involvement in preserving nature as part of their spiritual responsibility [31].

Overall, transdisciplinary approaches in education, including Islamic education, offer a great opportunity to address increasingly complex global challenges. The integration between disciplines, practical knowledge, as well as the involvement of non-academic stakeholders allows this approach to not only address existing problems, but also prepare students with the critical, creative, and collaborative skills necessary for the future. Despite the challenges in its implementation, such as complex curriculum design and the need for strong institutional support, the transformative potential presented by this approach is significant. Transdisciplinary education is not only relevant to the world of modern education in general, but also has great potential in the development of Islamic education, allowing for more holistic, innovative, and responsive learning to the challenges of the times.

**History and Transdisciplinary Roots in Islamic Education**

The transdisciplinary approach to education actually has strong roots in the tradition of Islamic education, especially in the golden age of Islamic civilization (8$^{th}$ to 14$^{th}$ centuries). During this time, Muslim scholars integrated religious science with worldly science, such as science, mathematics, medicine, philosophy, and astronomy, to produce holistic and comprehensive knowledge. For example, figures such as Al-Farabi, Ibn Sina (Avicenna), and Al-Khawarizmi combined religious knowledge with philosophy and science, creating a cross-disciplinary learning model. These scientists view that there is no separation between religious and mundane sciences, and that these two fields complement each other in a deeper understanding of the universe and human life[32]. In addition, educational institutions such as Baitul Hikmah in Baghdad became a transdisciplinary center where various disciplines were taught and developed together, showing how Islamic education at that time served as a model that combined various branches of science to solve complex social and scientific problems[33].

Early Islamic education was built on the basis of openness to various disciplines and cross-

[30] M Amin Abdullah, 'Religion, Science, and Culture: An Integrated, Interconnected Paradigm of Science', *Al-Jami'ah: Journal of Islamic Studies*, 52.1 (2014), pp. 175–203, doi:10.14421/ajis.2014.521.175-203; A Z Fitri, M Nafis, and L Indarti, 'Multidisciplinary, Interdisciplinary, and Transdisciplinary (MIT) Learning Approach and Strategy Based on Indonesian National Qualification Framework (KKNI) Curriculum', *Ulumuna*, 24.1 (2020), pp. 183–204, doi:10.20414/ujis.v24i1.375.

[31] D Yusmaliana, A Kurbiyanto, and G A N Zakaria, 'Green Minds, Sacred Paths: Nurturing Environmental Affection Through Islamic Education and Creative Imagination', in *World Sustainability Series*, 2024, PART F3411, 289–310, doi:10.1007/978-981-97-6639-0_17.

[32] S.H. Nasr, *Islamic Science: An Illustrated Study* (World Wisdom, 2003).

[33] F. Rosenthal, *The Classical Heritage in Islam* (Routledge, 1975).

disciplinary intellectual development. In areas that are centers of science, such as Baghdad, Cairo, and Andalusia, Muslim scholars and scholars are actively studying and integrating science from various cultures, including Greek, Persian, and Indian science. This interaction resulted in a highly multidisciplinary approach to education, in which religious science is studied side by side with science, mathematics, and philosophy. This is reflected in the development of schools of law (fiqh) and theological thought which are colored by the influences of various disciplines, making Islamic education at that time very diverse and intellectually rich [34].

This transdisciplinary approach is not only limited to the integration of science and religion, but also includes social and cultural sciences. In this context, Islamic education has long emphasized the importance of the relationship between religion, science, and culture in shaping a holistic understanding of the world. For example, Ibn Khaldun, a well-known Muslim historian and philosopher, developed a social theory that combines the study of history, politics, and economics with religious principles. This suggests that Islamic education at the time was inherently transdisciplinary, recognizing that understanding religion in depth required an understanding of a broader social and cultural context [35].

However, the influence of colonialism and globalization in the 19th and 20th centuries resulted in the fragmentation of Islamic education. The previously transdisciplinary model of education has become more focused on the teaching of a narrower religion, with little attention paid to the integration of modern science. This weakens the position of Islamic education in facing modern challenges and exacerbates negative stereotypes and Islamophobic phenomena in the international world. Therefore, the modernization of transdisciplinary-based Islamic education methodologies is becoming increasingly urgent, especially to answer complex socio-political and cultural challenges in the era of globalization [36].

A transdisciplinary approach to modern Islamic education should promote mutual and transformational learning, in which religious sciences and worldly knowledge are not only combined but also shaped to solve social and environmental problems. For example, Islamic education focused on environmental sustainability combines religious teachings with knowledge of environmental and cultural science, aiming to foster critical thinking skills and active involvement in addressing global issues such as climate change[37].

Historically, the shift from an inclusive search for knowledge to a narrower focus on religious science has negatively impacted intellectual and scientific production in the Muslim world. Therefore, the rise of transdisciplinary education among Muslims today can be seen as an effort to restore the spirit of inclusive and broad-based classical Islamic education. This is important not only to fight radicalization but also to create a more open and relevant understanding of Islam in the modern world [38].

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[34] S Pervez, 'Muslim Intellectual History: A Survey', *American Journal of Islam and Society*, 39.3–4 (2022), pp. 206–72, doi:10.35632/ajis.v39i3-4.2332.

[35] Abdullah.

[36] E A Samier, 'Authentic and Inauthentic Constructions of Islamic Educational Administration and Leadership: Contrasting Discursive Formations of Myths, Assumptions, Stereotypes, and Exclusions', in *The Palgrave Handbook of Educational Leadership and Management Discourse*, 2022, pp. 1429–48, doi:10.1007/978-3-030-99097-8_76.

[37] Lavrinoviča.

[38] A Sabic-El-Rayess, 'Epistemological Shifts in Knowledge and Education in Islam: A New Perspective on the Emergence of Radicalization amongst Muslims', *International Journal of Educational Development*, 73 (2020),

The history and transdisciplinary roots in Islamic education show that the integration between different disciplines has been a hallmark of Islamic education since its heyday. By combining religious and worldly sciences, Islamic education creates a holistic learning model that is relevant to the challenges of the times. However, the influence of colonialism and globalization has narrowed the scope of Islamic education, separating the important elements that were previously integrated. Therefore, the revival of a transdisciplinary approach in Islamic education is essential to confront contemporary challenges, both in the social, political, and environmental fields. By restoring the spirit of inclusive and knowledge-based learning, Islamic education can play an important role in building a society that is more critical, creative, and ready to face complex global issues.

**Case Studies or Examples of Implementation**

The transdisciplinary approach in Islamic education is becoming increasingly relevant in line with the complexity of the challenges of the modern world that require integration between various disciplines. Amid technological advancements, social changes, and global challenges such as environmental crises and economic inequality, Islamic educational institutions need to adapt to remain relevant. The transdisciplinary approach allows the integration of religious sciences with science, technology, and socio-cultural sciences, resulting in a more holistic curriculum that is responsive to the needs of the times. By combining spiritual insights and modern science, Islamic education can offer more comprehensive solutions to contemporary problems.

Some modern Islamic educational institutions have begun to adopt a transdisciplinary approach in an effort to strengthen their role in shaping a generation of Muslims who are ready to face the global world. For example, several Islamic boarding schools and universities have integrated religious studies with knowledge of information technology, environmental science, and socio-economic studies. This approach aims to prepare students with the practical skills needed in the digital age, without neglecting the spiritual and moral aspects of Islam. In this way, Islamic educational institutions seek to create graduates who are not only competent in the scientific field, but also have strong social and spiritual responsibility.

One of the important innovations in modern Islamic education is the application of neuroscience in the religious education curriculum. This case study explains how the principles of neuroscience are integrated into Islamic education to improve learning outcomes and adapt them to the needs of the millennial generation. In Yogyakarta, a third-generation university has developed a neuroscience-based Islamic education model, with a focus on research-based teaching. This model aims to modernize Islamic education to be more relevant to the entrepreneurial spirit and critical thinking skills required by today's young generation of Muslims. Through the integration of neuroscience, religious education is not only centered on the spiritual aspect, but also on the development of students' intellectual and emotional abilities [39].

One of the important components of neuroscience-based Islamic education is the taxonomy of learning which is structured based on the perspective of neuroscience. This taxonomy includes neuro-theology, neuro-philosophy, and neuro-education that combines the hierarchy of thought in Islamic education with Bloom's taxonomy. This taxonomy is designed to address the emotional, intellectual,

doi:10.1016/j.ijedudev.2019.102148.

[39] Suyadi and Widodo.

and spiritual aspects of students, creating a more comprehensive and in-depth approach to religious learning. This allows the development of the student's intellect ('aql) and brain simultaneously, in harmony with the teachings of the Qur'an which emphasizes the importance of reflection and critical thinking[40].

In addition, the Creative Imagination Based on Neuroscience (CIBN) model was developed for Islamic education at the elementary level. The model adapts learning tools from Vygotsky's theory to foster creative thinking among students, which is often underrepresented in traditional Islamic education. Using the principles of neuroscience, this model helps teachers understand how the process of imagination and creativity works in students' brains. As a result, students are encouraged to think more freely and creatively, an approach that is crucial in this digital age, where creative thinking skills are indispensable for solving real-world problems[41].

The application of neuroscience in Islamic education is als' extended to environmental education. In this case, religious teachings that prioritize responsibility for nature are integrated with modern environmental education through a creative imagination approach. Students are taught to understand the importance of preserving the environment through creative and innovative thinking, and are inspired by religious principles that support ecological sustainability. This study shows that the merger of religious teachings and neuroscience can result in a more transformative and positive impact educational model, both for students and their environment [42].

The implementation of a transdisciplinary approach in Islamic Education at Sakinah Circle is an effort to integrate various disciplines with a holistic Islamic perspective. This approach blends the Alberta curriculum with Qurʾāni values and Islamic concepts at every level of learning. Sakinah Circle not only teaches science in a linear manner, but connects each lesson to three main themes: Tawhid (Oneness of God), Risalah (Prophethood), and Maʿād (Resurrection). Through this integration, students not only learn general knowledge but also develop spiritual and ethical awareness based on Islamic principles [43].

This transdisciplinary approach is evident in the thematic curriculum, where various fields of study are linked through larger themes related to nature, Islamic history, and service to others. For example, science learning is connected with verses of the Qur'an that invite humans to reflect on the signs of Allah's creation in the universe, thus triggering a sense of awe and awareness of His greatness. Likewise, learning history is not just about conveying facts, but instilling an understanding of the role of humans as caliphs on earth, who are responsible for the environment and fellow creatures.

In this transdisciplinary context, Sakinah Circle also integrates Arabic and Qur'an studies in each discipline, enriching students' understanding of Islamic teachings through reflection and interdisciplinary connection. This approach ensures that education at Sakinah Circle is not just about the transmission of information, but about building a critical, conscious, and compassionate person, in line with Islam's mission of educating a civilized and responsible generation.

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[40] Suyadi, 'Learning Taxonomy of Islamic Education: The Development of Aql and the Brain in Quran from a Neuroscience Perspective', *Millah: Journal of Religious Studies*, 21.2 (2022), pp. 361–410, doi:10.20885/millah.vol21.iss2.art3.

[41] Yusmaliana, Kurbiyanto, and Zakaria, PART F3411.

[42] Yusmaliana, Kurbiyanto, and Zakaria, PART F3411.

[43] Sakinah Circle, *Sakinah Circle Handbook* (Sakinah Circle, 2010).

The transdisciplin'ry approach to thematic learning at Sakinah Circle integrates the Qur'anic worldview in all areas of study and provides a platform to bring together different grade levels. The themes chosen reflect important concepts drawn from the Qur'an, which play a role in connecting learning and shaping the way we think and see the world.

In planning each theme, the teachers explore how the topic is presented in the Qur'an and how it shapes our worldview. With this understanding, they then identify various curriculum connections and plan an integrated learning experience. The goal is to engage students in meaningful learning with a deep and continuous understanding of the Qur'an. This approach explores each theme with a focus on nature, finding roots in history and tradition, and creating opportunities for social service.

This thematic learning broadens students' horizons through close cross-disciplinary relationships, utilizing the stories of the Prophets, the concepts of natural wonders, and the history of Islamic civilization. This kind of teaching not only instills knowledge, but also shapes the character of students as a caliph on earth who is responsible for the environment, fellow creatures, and themselves, in harmony with the principles of the Qur'an.

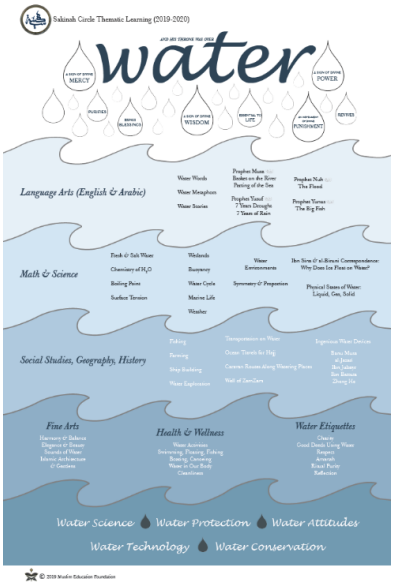


**Figure 1. The Theme "Water"**

In thematic learning at Sakinah Circle, the theme "Water" is one example of how learning is integrated holistically with Qur'anic values. Water is seen as a sign of Divine grace, wisdom, and strength, as well as essential to life. The theme covers a wide range of subjects, from English and Arabic, Science, to Art, History, and Physical Education [44].

In *Language Arts*, students learn about words related to water, metaphors that use water as a symbol, as well as stories from the Qur'an such as the story of the Prophet Moses who parted the sea, the Prophet Noah with the great flood, and the story of the Prophet Jonah who was swallowed by a big fish. Through these stories, students are invited to understand the concept of water in a religious and literacy perspective [45].

In *Math & Science*, students are taught scientific concepts such as the difference between fresh

[44] Sakinah Circle, 'Themes', *Sakinah Circle*, 2024.
[45] Sakinah Circle, 'Themes'.

and saltwater, boiling and freezing points of water, surface tensions, and the water cycle and its role in the environment. With an approach that combines science and mathematics, students learn to understand the water phenomena around them through experiments and observations [46].

*Social Studies* and *Geography* explores how water has influenced human civilization. Students learn about the hajj journey involving the sea, the caravan route that passes through the oasis, as well as the history of the Zamzam well. They also explored the ways in which water was used in shipping, agriculture, and exploration, as well as the importance of water management in ancient and modern societies [47].

In the field of *Fine Arts*, students are inspired by the beauty and sound of water, as well as learn the aesthetic elements contained in Islamic architectural art, such as beautiful water parks.

In addition, the theme of water is also reinforced in *Health & Wellness*, where students engage in a variety of water-related physical activities such as swimming, rowing, and fishing. Personal and body hygiene is also an important part of learning, emphasizing the importance of water in maintaining health [48].

Finally, *Water Etiquettes* teaches students the manners of using water, including charitable deeds that can be done with water, such as sharing water with the needy, as well as how to keep water as a mandate from Allah [49].

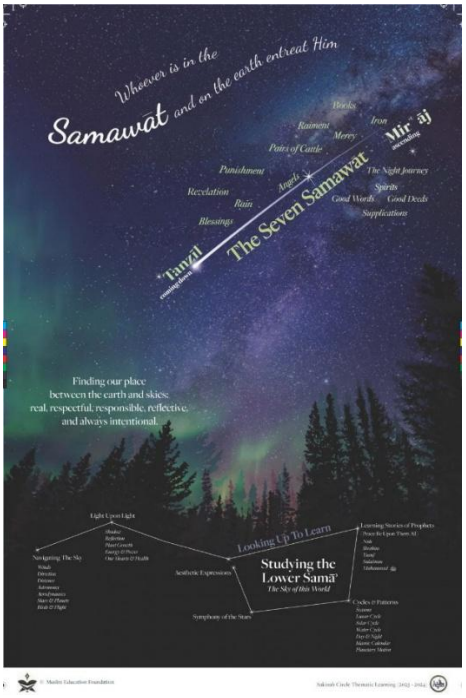


**Figure 2. Thematic Learning "Samawat" at Sakinah Circle**

In the thematic learning "Samawat" at Sakinah Circle, students are invited to contemplate the sky as part of the great creation of Allah. This theme combines various disciplines such as science,

[46] Sakinah Circle, 'Themes'.
[47] Sakinah Circle, 'Themes'.
[48] Sakinah Circle, 'Themes'.
[49] Sakinah Circle, 'Themes'.

history, art, and spirituality, and connects students with the spiritual meaning of the heavens mentioned in the Qur'an [50].

In science learning, students study natural phenomena in the sky such as wind, stars, planets, and cardinal directions. They also learned about basic astronomy, the cycles of the sun and moon, and the patterns seen in the sky that help humans in navigation and dating. Through this approach, students are invited to see order and harmony in God's creation and how this knowledge has been used throughout human history[51].

*History* and *Geography* focuses on the concept of the sky in the Islamic tradition, including the stories of prophets related to the sky, such as the Mi'raj event of the Prophet Muhammad, which introduced the concept of the layers of the sky (Samawat) that are connected to human spirituality. In addition, students are also invited to understand the importance of the sky in other important events such as the descent of revelation (Tanzil) which signifies grace and guidance from Allah [52].

In the field of *art*, students are invited to express the beauty of the sky through artwork that reflects the symphony of stars, light, and natural patterns seen in the night sky. They learn about the aesthetic beauty of nature and how this can be an inspiration for their artistic expression [53].

Spiritually, this theme teaches students about the role of humans in finding their place between the earth and the sky, as well as the importance of being individuals who are aware of their responsibilities to God, humans, and nature. Students are taught to always respect, be responsible, and reflect these traits in their daily lives [54].

The theme "Samawat" provides an immersive and connected learning experience, helping students understand the relationship between science, history, art, and spirituality in the context of Islam. It is not only about cognitive learning, but also creating a deep spiritual awareness of their creation and existence in the universe [55].

[50] Sakinah Circle, 'Themes'.
[51] Sakinah Circle, 'Themes'.
[52] Sakinah Circle, 'Themes'.
[53] Sakinah Circle, 'Themes'.
[54] Sakinah Circle, 'Themes'.
[55] Sakinah Circle, 'Themes'.


**Figure 3. Theme "Nurturing with Sakinah"**

In the theme "Nurturing with Sakinah" carried out by Sakinah Circle, learning is directed to educate students to develop spiritual, intellectual, and emotional awareness that is integrated with the Qur'anic worldview. This theme aims to cultivate natural nature in students by focusing on core values such as compassion, balance, and respect for creation [56].

In *Mathematics*, students are taught about patterns in nature, counting the blessings they have, as well as understanding the concept of destiny (*Taqdir*) and precise measurement. This learning invites students to see the order and interconnectedness of everything in God's creation, and to relate it to mathematical principles.

*Natural Sciences* focuses on fostering a sense of awe for the wonders of nature. Students learn about life cycles, growth, and cleaning processes in nature. Topics such as the conservation of land and community grasslands become part of the learning that links science with human responsibility as the caliph on earth [57].

In the field of *Health and Welfare*, students are invited to understand the importance of maintaining physical and mental health through good nutrition, rest, and self-care. In addition, concepts about body systems, digestion, and breathing are also taught, where they learn about the importance of taking care of the body as a mandate from Allah. Prophetic medicine practices and natural remedies are also introduced to broaden students' horizons about holistic health [58].

In *Languages and Literature* (English and Arabic), students learn stories from prophets, as well as poems and stories that foster the values of care and nurturing. Students are also encouraged to reflect on the beauty and meaning of language as a means to draw closer to Allah and create a deeper

[56] Sakinah Circle, 'Themes'.
[57] Sakinah Circle, 'Themes'.
[58] Sakinah Circle, 'Themes'.

connection with others [59].

*Social Studies* invites students to learn about concepts such as family, community, and human rights, as well as the concept of waqf (amal jariyah). Through this learning, students understand the importance of being an individual who cares about the welfare of the community and plays an active role in maintaining justice and sustainability in the world [60].

This thematic learning instills *Nurturing Etiquettes* such as developing piety, maintaining honesty, and managing intentions with a sincere heart. It helps students to become responsible, reflective, and respectful individuals in every aspect of their lives, in line with the Qur'anic vision [61].

The application of a transdisciplinary approach in Islamic education at Sakinah Circle shows how the integration of various disciplines with a Qur'anic worldview can create a holistic and immersive learning environment. By combining the Alberta curriculum with Islamic values, Sakinah Circle has succeeded in building a balanced spiritual, intellectual, and social awareness in students. Each lesson is not only seen as a transfer of information, but as part of a comprehensive process of self-development, in which science and religion complement each other [62].

This approach provides space for students to learn about the world through various disciplines such as science, mathematics, history, languages, and art, while always referring to the verses of the Qur'an and the teachings of Islam as a moral and spiritual foundation. For example, themes such as "Water" and "Sky" teach students to connect natural phenomena with signs of Allah's greatness, while also instilling their sense of responsibility as caliphs on earth. This strengthens their understanding of the importance of maintaining the balance of nature and contributing positively to the community [63].

In addition, Sakinah Circle also succeeded in showing how a transdisciplinary thematic approach can create a deeper and more thorough understanding in students. By integrating Islamic science, spirituality, and ethical values into every aspect of learning, students not only acquire academic knowledge, but also critical thinking skills, self-awareness, and high empathy. Programs such as the Sakinah Circle show that modern Islamic education can remain relevant to the challenges of the times, while maintaining the core values that shape noble character and personality [64].

[59] Sakinah Circle, 'Themes'.
[60] Sakinah Circle, 'Themes'.
[61] Sakinah Circle, 'Themes'.
[62] Sakinah Circle, 'Themes'.
[63] Sakinah Circle, 'Themes'.
[64] Sakinah Circle, 'Themes'.

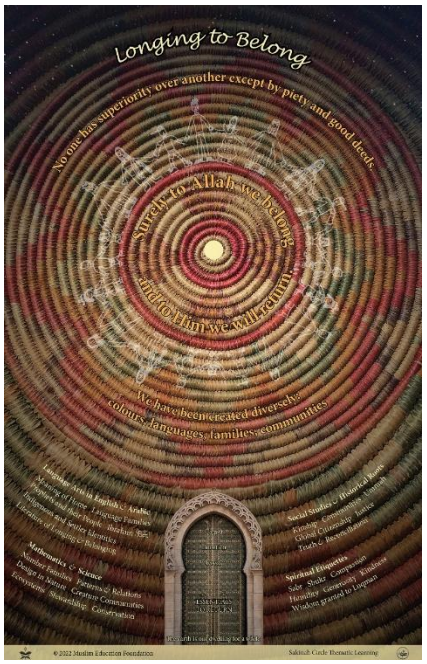


**Figure 4. Theme "Longing to Belong"**

With the theme "Longing to Belong" at Sakinah Circle, learning focuses on a deep understanding of the concept of togetherness, diversity, and the importance of the role of individuals in the global community. This theme is inspired by the verse of the Qur'an which states that "Verily to Allah we return," inviting students to reflect on our origins and ultimate destination in life [65].

In *Language Arts* (English and Arabic), students learn the meaning of home, family language, and narratives about human origins and the longing to belong. They also explore literary works that foster awareness of the importance of community and how feelings of attachment and togetherness are essential for spiritual and social well-being [66].

In *Mathematics and Science*, students study patterns and relationships that exist in nature and society. They also explore design in nature, communities of living things, and ecosystems that show the connection between the individual and the whole. The concept of stewardship is an important part, emphasizing individual responsibility to the environment and fellow creatures [67].

*Social Studies* explores the history and relationships between nations, languages, and families. Students learn how their identities are shaped by history and tradition, as well as the importance of global justice, human rights, and responsibility as global citizens. This learning covers concepts such as justice, reconciliation, and the role of humanity in creating just and inclusive communities [68].

Spiritually, *Spiritual Etiquettes* teaches students about values such as patience, gratitude, generosity, and wisdom instilled by Luqman. Students are invited to understand that success in life is not measured by wealth or social status, but by devotion and good deeds [69].

This thematic learning "Longing to Belong" invites students to see the importance of diversity

[65] Sakinah Circle, 'Themes'.
[66] Sakinah Circle, 'Themes'.
[67] Sakinah Circle, 'Themes'.
[68] Sakinah Circle, 'Themes'.
[69] Sakinah Circle, 'Themes'.

in the human community and how Allah created humanity in different colors, languages, and families. Through this approach, students at Sakinah Circle are encouraged to become caring, inclusive, and aware of their role in creating a better world, always remembering that this earth is only a temporary stopover [70].

## Conclusion

The transdisciplinary approach in Islamic education integrates various disciplines such as religion, science, technology, and humanities to address complex problems holistically, transcending traditional academic boundaries. The history of Islamic education shows that the integration of religious science and worldly science has been a hallmark of the golden age of Islamic civilization, where Muslim scholars such as Ibn Sina and Al-Farabi created cross-disciplinary learning. Although the influences of colonialism and globalization led to the fragmentation of Islamic education, modern transdisciplinary approaches seek to revive this spirit of inclusivity, modernizing the curriculum to prepare students for contemporary global challenges, including environmental, social, and political issues.

This study has examined the application of a transdisciplinary approach in Islamic education, focusing on how this approach is integrated in educational institutions such as Sakinah Circle. The results of the study show that the transdisciplinary approach at Sakinah Circle has succeeded in connecting various disciplines such as science, mathematics, history, language, and art with Qur'anic values. Each theme taught, such as "Water" and "Samawat", not only delves into the scientific aspects but also the spiritual and ethical, creating a holistic learning experience for the students

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