

EXPLORATION OF INTEGRATION AND SCIENTIFIC DEVELOPMENT IN ISLAMIC EDUCATION AND PESANTREN: A QUALITATIVE STUDY

Hafid (1)

UIN Syarif Hidayatullah Jakarta (1)

hafidaja250505@gmail.com (1)

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Abstract

The fragmentation between religious and secular sciences in Islamic education has become an epistemological and structural challenge that hinders the emergence of a holistic synthesis of knowledge. This article aims to explore a transdisciplinary approach based on Islamic values as an integrative alternative capable of bridging this dichotomy. Using a descriptive qualitative method and a case study strategy, data were collected through in-depth interviews, participatory observations, and documentation in Islamic educational institutions that apply transdisciplinary practices.

The findings reveal that the transdisciplinary approach has begun to be internalized through curriculum integration, cross-disciplinary study forums, and final projects that combine religious and scientific perspectives. Islamic values such as tawhid, adab, and maqasid syariah serve as the epistemological foundation and ethical framework in the synthesis of knowledge. Thematic analysis shows that tawhid-based epistemology encourages holistic thinking, while the dynamics of knowledge integration highlight the need for paradigm reconstruction and teacher training.

Despite structural and cultural barriers, such as segmented curricula and resistance to paradigm shifts, the transdisciplinary approach holds great potential for development through institutional innovation, cross-disciplinary training, and strengthening of learning resources. This article recommends enhancing integrative curricula, fostering institutional collaboration, and empowering learners as strategic steps toward transforming Islamic education into a more relevant, meaningful, and competitive system.

Keywords: transdisciplinary, Islamic education, tawhid, knowledge integration, Islamic values

INTRODUCTION

Islamic education in Indonesia, particularly within pesantren and Islamic higher education institutions, has long been recognized for its rich scientific traditions rooted in the classical legacy of the ulama. However, in facing the increasingly complex dynamics of modern times, Islamic education is confronted with serious challenges in the form of scientific fragmentation. Religious knowledge and secular sciences are often separated structurally and epistemologically, creating a dichotomy that hinders the emergence of a comprehensive and relevant synthesis of knowledge (Maswati, 2024).

This fragmentation not only affects students' ways of thinking but also influences curriculum development and educational policies. On the one hand, religious knowledge is considered sacred but limited to the spiritual realm; on the other hand, secular sciences are seen as

profane and value-free. In fact, within the Islamic tradition, all knowledge originates from God and inherently carries ethical and spiritual dimensions (Rahmani, 2024).

In today's era of global complexity, the transdisciplinary approach emerges as a promising alternative to bridge the gap between different disciplines. This approach not only combines various fields technically but also seeks to build new syntheses rooted in universal values. In the context of Islamic education, a transdisciplinary approach grounded in Islamic values offers a pathway to integrate knowledge with spirituality, ethics, and humanistic vision (Sulaeman, 2024). The writing structure in *Singularitas: Journal of Islamic Education* is expected to follow a discussion system using the IMRAD format (Introduction, Method, Result, and Discussion). The introduction contains an explanation of the academic concern of the research conducted. The explanation of the academic concern should include adequate background information so that the problem addressed becomes interesting to discuss and has significance for the development of Islamic Education Studies. The introduction should also contain a research purpose statement, ensuring that the discussion has a clear and focused direction in line with the scope and focus of *Singularitas: Journal of Islamic Education*. To differentiate the research conducted, a literature review is required with a brief explanation that reflects the novelty of the research. The topic selection is expected to be a hot and central issue in the development of the study.

The explanation in the introduction should address and answer how the significance of the chosen theme contributes to the advancement of Islamic Education Studies. What differentiates this theme from similar studies that have been conducted, at least 2 previous research titles. These explanations should be built using primary reference sources. The use of references should rely on primary sources in each study. If journal articles are used as references, it is recommended that their publication dates do not exceed 5 years from the year this research is published. If books are used as references, it is recommended that their publication dates do not exceed 10 years from the year this research is published.

LITERATURE REVIEW

The concept of transdisciplinarity represents a paradigm in scientific inquiry that transcends disciplinary boundaries, both structurally and epistemologically. Unlike multidisciplinary, which merely juxtaposes different fields, or interdisciplinary, which connects them methodologically, transdisciplinarity seeks to produce new syntheses that unify knowledge, values, and practice into a coherent whole (Maswati, 2024). Its defining characteristics include the ability to address complex problems that cannot be solved by a single discipline, the active involvement of diverse stakeholders such as academics, practitioners, and society, the integration of ethical and spiritual dimensions into scientific processes, as well as methodological openness and flexibility (Sulaeman, 2024).

When compared to multidisciplinary and interdisciplinary approaches, transdisciplinarity is distinguished by its emphasis on paradigm transformation. It is not limited to cooperation among disciplines, but rather seeks to generate socially and spiritually relevant knowledge. In the context of Islamic education, this provides the opportunity for substantive integration between religious and secular sciences, avoiding a dichotomy that has often hindered holistic development (Rahmani, 2024).

Islamic values play a vital role in shaping the epistemological foundation of this integration. Tawhid, the principle of God's Oneness, functions not only as a theological basis but also as an

epistemological one. It affirms that all knowledge originates from Allah and is intended to bring humanity closer to Him. Thus, knowledge in Islam is not value-neutral but inherently moral and spiritual (Al-Attas, 1995; Hidayat, 2023). This perspective allows for the integration of empirical and revealed sciences, thereby fostering the development of holistic individuals who are knowledgeable, faithful, and virtuous. Equally important is the ethics of knowledge in Islam, which emphasize honesty, responsibility, justice, and societal benefit. Knowledge must not be used to exploit or deceive, but rather to promote the greater good. As classical scholars highlighted, the pursuit of knowledge must always be accompanied by *adab* (proper conduct) and sincere intention (Nasution, 2022). This ethical framework is essential for a transdisciplinary approach, ensuring that scientific synthesis remains rooted in values that uphold human dignity and environmental balance.

The tradition of integration can also be traced in *pesantren* and Islamic higher education. *Pesantren*, though often informal in their approach, have long integrated classical Islamic texts (*kitab kuning*) with social, cultural, and economic practices of their communities. In contrast, Islamic universities have developed more formalized models of integration through interconnection-based curricula, as seen in UIN, IAIN, and STAI (Zarkasyi, 2021; Siregar, 2024). These models combine religious and secular sciences within the curriculum, introduce courses linking Islamic values with modern disciplines such as business ethics and psychology, and encourage interdisciplinary research grounded in Islamic perspectives. A transdisciplinary approach enhances these models by incorporating value synthesis, community engagement, and problem-solving orientations.

RESEARCH METHODOLOGY

This research employed a descriptive qualitative design, chosen to explore the phenomenon of transdisciplinarity in Islamic education in a detailed and contextual manner. The qualitative approach is particularly suitable for examining meanings, values, and practices that emerge in the integration of knowledge within Islamic educational settings (Creswell, 2014).

A case study strategy was adopted, enabling an in-depth examination of Islamic educational institutions—both *pesantren* and Islamic universities—that have initiated or implemented transdisciplinary approaches. Such a strategy allowed the researcher to investigate the dynamics, challenges, and outcomes of applying transdisciplinary practices (Yin, 2018).

The subjects of the study included educators and administrators from *pesantren* and Islamic universities, academics who specialize in knowledge integration, and key figures involved in Islamic curriculum development. Research sites were purposively selected institutions that demonstrated efforts toward transdisciplinary integration. Data were collected through in-depth interviews with key informants, participant observation of teaching and academic activities, and document analysis of curricula, syllabi, modules, and institutional publications.

The data were analyzed using thematic analysis. The process involved reducing data by filtering significant information, presenting the data in the form of narratives and thematic matrices, and finally drawing conclusions to identify patterns, meanings, and implications of transdisciplinarity in Islamic education. To maintain validity, triangulation of sources and methods was employed, along with member checking with informants to verify interpretations.

RESULT AND DISCUSSION

The findings of this study indicate that transdisciplinary practices are beginning to take root in both modern pesantren and Islamic universities. For example, Pesantren XYZ integrates the study of classical Islamic texts with subjects such as biology and physics, often linking these with Qur'anic verses about creation. One observed case involved lessons on the human respiratory system paired with interpretations of Qur'anic discussions on life and the soul. In Islamic universities such as UIN ABC, students of Islamic economics are required to write theses that synthesize conventional economic theories with the principles of maqasid syariah, thereby combining quantitative methodologies with spiritual insights. Moreover, thematic forums such as "Fiqh of Technology" and "Digital Ethics in Islam" have emerged in some Islamic campuses, involving cross-disciplinary collaboration among scholars of law, computer science, and philosophy. These initiatives demonstrate that transdisciplinarity is no longer theoretical but has been incorporated into academic design and practice.

Islamic values are central in shaping knowledge synthesis across disciplines. Tawhid is positioned as the unifying axis, ensuring that all branches of knowledge are seen as interconnected paths leading to the Creator. In the classroom, academic assessments extend beyond cognitive performance to include students' adab and akhlaq, reflecting the ethical dimension of knowledge. Furthermore, maqasid syariah is applied as a framework to evaluate the relevance and social benefit of new theories or technologies, ensuring that knowledge production remains aligned with Islamic ethical objectives.

Thematic Analysis

The thematic analysis further reveals two important aspects. First, the epistemological construction based on tawhid provides a holistic framework that prevents fragmentation and reductionism in knowledge. Islamic universities have embedded tawhid into the curriculum through courses such as *Islamic Professional Ethics, Science and Tawhid*, and *Islamic Philosophy of Knowledge*. This demonstrates the institutionalization of tawhid-based epistemology as a structural foundation for integration.

Second, the dynamics of integrating religious and secular sciences are complex. Some pesantren have contextualized fiqh studies by linking them to modern challenges such as environmental sustainability, digital economics, and public health. At the same time, Islamic universities have promoted interconnection approaches where students are encouraged to analyze phenomena from both religious and scientific lenses. However, obstacles remain in methodology, terminology, and orientation, making full synthesis difficult. This suggests the need for paradigm reconstruction, educator training, and habituation in interdisciplinary thinking grounded in Islamic values.

Challenges and Opportunities

Despite the progress, several structural and cultural barriers persist. Structurally, Islamic education in Indonesia remains segmented, with curricula that often separate religious sciences from secular disciplines. Rigid institutional divisions between faculties limit collaboration, while culturally, some educators resist transdisciplinary approaches, fearing that they blur disciplinary boundaries or undermine traditional paradigms. Moreover, the lack of human resources with both interdisciplinary competence and strong grounding in Islamic scholarship further constrains the process.

Nonetheless, significant opportunities exist. Innovative institutions have already developed courses such as *Islamic Environmental Fiqh*, *Ethics of Technology in Islam*, and *Qur'anic Psychology*, demonstrating the feasibility of meaningful synthesis. With adequate policy support, institutional innovation, and paradigm shifts, transdisciplinarity rooted in Islamic values can become a future model of Islamic education. Key strategies for advancing this agenda include training educators in interdisciplinary methods, strengthening collaboration across faculties and institutions, developing transdisciplinary textbooks and modules, and encouraging integrative research projects.

CONCLUSION

The transdisciplinary approach grounded in Islamic values offers a holistic, relevant, and contextual paradigm for Islamic education. This research shows that the fragmentation between religious and secular sciences remains a major challenge. However, through tawhidbased epistemology and values such as adab, maqasid shariah, and ethics of knowledge, meaningful integration is achievable.

Transdisciplinary practices have begun to emerge through integrative curricula, crossdisciplinary forums, and interdisciplinary research. Islamic values play a pivotal role in ensuring that this synthesis is not only academic but also spiritual and socially beneficial. Thus, Islamic education can produce generations that think across disciplines, uphold ethics, and wisely respond to contemporary challenges.

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