

The Epistemological Evolution of the Integration of Knowledge: From al-Faruqi's Islamization of Knowledge towards Amin Abdullah's Interconnection and Kuntowijoyo's Prophetic Social Science

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ABSTRACT

The challenges of modernity and the complexity of social crises demand a repositioning of Islamic education so that it does not become trapped in the dichotomy of secular and normative sciences. To address this need, this study aims to examine and synthesize the epistemological evolution of the discourse on the integration of knowledge through a comparative analysis of the thoughts of Ismail Raji al-Faruqi, M. Amin Abdullah, and Kuntowijoyo. Employing a qualitative approach with a library research design and content analysis techniques, this study dissects the fundamental structures of the primary literature of these three figures to trace their ontological, epistemological, and axiological frameworks. The results of the study indicate a linear and complementary paradigm shift. This evolution was initiated by methodological purification efforts through al-Faruqi's Islamization of Knowledge, then progressed toward an open interdisciplinary dialogue through Amin Abdullah's Integration-Interconnection paradigm, and culminated in practical field transformation through Kuntowijoyo's Prophetic Social Sciences. The conclusion of this study confirms that these three concepts do not negate one another, but rather form a complete continuum of the "Prophetic Integration" model. The epistemology of Islamic scholarship has proven to have maturely evolved from a mere instrument of cognitive-textual transmission into an instrument of social engineering. This tripartite construction provides both a philosophical and tactical foundation for higher education institutions to produce advanced graduates who are not only theoretically sound but also capable of operationalizing knowledge as a concrete tool for solving socio-humanitarian problems.

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Introduction

The challenges of modernity, characterized by technological disruption, a global ethical crisis, and the complexity of social problems, demand a repositioning of the role of Islamic education

(Rahman, 2025). Amidst the current of knowledge secularization, the discourse on the integration of knowledge has become an academic necessity to avoid a dichotomy between theological aspects and modern science. As demanded by the current learning outcomes of Islamic education, students are not only expected to master texts but also to be capable of solving social problems and developing relevant theories through a robust integration model (Pan et al., 2024).

The discourse on the integration of knowledge within the Islamic world is not a static entity but an evolutionary dynamic (Glyptou, 2025; Juschten et al., 2025; Rosanawati et al., 2025). This effort began systematically through the Islamization of Knowledge movement pioneered by Ismail Raji al-Faruqi (Al-Faruqi, 1988). Al-Faruqi emphasized the importance of infusing *tawhidic* (monotheistic) values into modern scientific disciplines to overcome the dualism of the educational system (Al-Faruqi, 1988; Had, 2019; Muslih et al., 2024). However, as it developed, some circles considered this model to still be "justificatory" in nature, thus giving rise to the need for a more open and interdisciplinary dialogue.

Entering the next phase, M. Amin Abdullah offered the Integration-Interconnection paradigm (Abdullah, 2006). This paradigm no longer merely "Islamizes" knowledge but builds a productive dialogue among *hadharah al-nash* (the culture of text), *hadharah al-falsafah* (the culture of reason), and *hadharah al-ilm* (the culture of science). The "spider web" approach he espoused provides room for religious sciences to interact with social sciences and humanities on an equal and mutually enriching footing (Nisa & Ibrahim, 2025).

This evolution reached a sharp practical point in Kuntowijoyo's thought through the concept of Prophetic Social Science (ISP) (Riyanto, 2025). Kuntowijoyo brought knowledge integration into the realm of social transformation with three main pillars: humanization, liberation, and transcendence (Effendi et al., 2023). Through Prophetic Social Science, knowledge integration does not stop at the epistemological level in the classroom but transforms into an instrument to address the realities of poverty, injustice, and moral degradation.

This article aims to dissect the epistemological evolution of these three schools of thought. The urgency of this research lies in the effort to synthesize the developmental trajectory of knowledge integration from the global initiation phase (Al-Faruqi), to the dialogical-academic phase (Amin Abdullah), up to the axiological-transformative phase (Kuntowijoyo). By understanding this evolutionary line, it is hoped that a more comprehensive model of knowledge integration will emerge for the development of contemporary Islamic education in responding to the challenges of modernity.

Method

This research employs a qualitative approach with a library research design (Creswell W. J. & Creswell J. D., 2018). The primary focus of this study is the tracing of intellectual history and textual analysis to dissect the epistemological evolution of the integration of knowledge within the Islamic education tradition. A philosophical approach is utilized to uncover the ontological, epistemological, and axiological frameworks of each examined figure's thought.

Data sources in this study are classified into two categories: primary and secondary sources (H.E. Bahruddin & Asep Saepul H., 2016). Primary sources consist of the *magnum opuses* of the three main figures, namely: (1) *Islamization of Knowledge: General Principles and Workplan* by Ismail Raji al-Faruqi; (2) *Islamic Studies di Perguruan Tinggi: Pendekatan Integratif-Interkonektif* by M. Amin Abdullah; and (3) *Paradigma Islam: Interpretasi untuk Aksi* and *Muslim Tanpa Masjid* by Kuntowijoyo. Meanwhile, secondary sources encompass reputable national and international journal articles, reference books,

and proceedings relevant to the discourse on knowledge integration, Islamic education, and the methodologies of these figures within the last decade to ensure the novelty of the research context.

Data collection was conducted through the documentation method (Creswell W. J. & Creswell J. D., 2018). This step involved a heuristic reading of the existing literature, followed by thematic categorization based on epistemological indicators: theoretical foundations, integration mechanisms, and socio-educational implications.

Data analysis was carried out using content analysis and comparative analysis techniques (Matthew B. Miles & A. Michael Huberman, 2014). The analytical process refers to an interactive model that includes data reduction, data display, and conclusion drawing. Specifically, the analysis in this research was executed through three operational steps: *First*, extracting the fundamental structure of each figure's thought regarding the integration of knowledge. *Second*, conducting a theoretical comparison to identify the points of intersection and divergence among the paradigms. *Third*, performing an evolutive synthesis to formulate a linear trajectory of intellectual development—from the Islamization model, towards Interconnection, and ultimately culminating in Prophetic Social Science—as a unified model of Islamic education's response to modernity.

Results and Discussion

1. Results

The discourse on the integration of knowledge in Islamic education was not born in a vacuum, but rather as a dialectical response to the hegemony of secular science and the multidimensional crises brought about by modernity. The analysis of the thoughts of Ismail Raji al-Faruqi, M. Amin Abdullah, and Kuntowijoyo reveals a linear and evolutive paradigm shift. This evolution moves from efforts of methodological purification, towards interdisciplinary dialogue, and ultimately culminates in the praxis of social transformation.

a. The Initiation Phase: The Foundation of *Tawhid* in Al-Faruqi's Islamization of Knowledge

The initial idea of a systematic integration of knowledge in the contemporary era was driven by Ismail Raji al-Faruqi through the Islamization of Knowledge project. The starting point of Al-Faruqi's (1982) thought was an anxiety over the "malaise" or identity crisis experienced by the Muslim *ummah* due to the dualism of the educational system; namely, the clash between exclusive traditional Islamic education and modern secular education that reduces spiritual values.

For Al-Faruqi, the epistemology of modern science is not neutral but laden with the value biases of Western civilization, which separates revelation from reason. Therefore, he offered the principle of *Tawhid* (monotheism) as the primary ontological and epistemological foundation. This Islamization process demands the deconstruction of modern sciences, which are then to be reconstructed and integrated with Islamic principles. However, at the implementation level, this model received discursive criticism because it often fell into a process of "labeling" or scientific justification of religious texts. This highly normative approach was deemed insufficiently adequate to respond to the complexity of social problems practically, which in turn triggered the birth of a more open dialogical phase.

b. The Dialogical Phase: M. Amin Abdullah's Integration-Interconnection Paradigm

Responding to the deadlock of the scientific purification approach, M. Amin Abdullah offered the "Integration-Interconnection" paradigm, represented through the metaphor of a spider web. This paradigm marks an epistemological shift from a defensive-apologetic approach to one that is more open, critical, and communicative.

Abdullah (2006) sharply criticized epistemologies that stand alone and consider themselves absolutely true (single entity). He formulated the need for a triadic dialogue among three civilizational domains: *hadharah al-nash* (the culture of text/revelation), *hadharah al-falsafah* (the culture of philosophy/critical ethics), and *hadharah al-ilm* (the culture of empirical science). In this model, religious science is not positioned as a "judge" over modern science, but as an equal dialogue partner. Islamic sciences (*al-ulum al-islamiyyah*) are placed alongside social sciences, humanities, and natural sciences to greet, correct, and enrich one another. This paradigm significantly breaks the deadlock of scientific fragmentation in higher education, enabling students to view and analyze a social phenomenon from various multidimensional perspectives.

c. The Axiological Phase: Kuntowijoyo's Prophetic Social Science as an Instrument of Transformation

The evolution of knowledge integration found its sharpest practical form in Kuntowijoyo's idea of Prophetic Social Science (ISP). If Al-Faruqi focused on basic scientific methodology and Amin Abdullah on interdisciplinary dialogue in the academic sphere, Kuntowijoyo (2001) pulled knowledge integration entirely into the realm of axiology (utility value) to solve real social problems in the field.

ISP is built upon a transformative reading of religious texts, which is extracted into three operational methodological pillars:

- 1) Humanization (*Amar Ma'ruf*): The effort to humanize human beings and liberate society from dehumanization caused by the bureaucratic machine, technocracy, or modern capitalist structures that reduce human values.
- 2) Liberation (*Nahi Munkar*): The liberation of society from the traps of poverty, social structural injustice, discrimination, and both economic and political oppression.
- 3) Transcendence (*Tu'minuna Billah*): Returning the orientation of all liberation and humanitarian movements to divine values, ensuring that science and social movements have a solid ethical and moral foundation.

Through these pillars, the integration of knowledge is no longer passive-reflective but becomes a proactive analytical tool. Students and academics are required not only to formulate new theories but also to ensure that these theories possess an emancipatory driving force for society.

d. Evolutive Synthesis: Constructing a Contemporary Social Problem-Solving Model.

Table 1. Synthesis of the Epistemological Evolution of Knowledge Integration in Islamic Education

Aspect of Comparison	The Initiation Phase (Ismail Raji al-Faruqi)	The Dialogical Phase (M. Amin Abdullah)	The Axiological Phase (Kuntowijoyo)
Main Paradigm	Islamization of Knowledge	Integration-Interconnection (Spider Web Metaphor)	Prophetic Social Science (ISP)
Epistemological Focus	Purification and scientific justification based on Islamic values.	Equal interdisciplinary dialogue among scientific domains.	Social transformation praxis based on religious texts.
Theoretical Foundation	<i>Tawhid</i> as the primary ontological and methodological principle.	Triadic <i>Hadharah: al-Nash</i> (text), <i>al-Falsafah</i> (reason), <i>al-Ilm</i> (empirical science).	Three Pillars: Humanization, Liberation, and Transcendence.
Dominant Orientation	Ontological-Theological: Building the foundation of Muslim identity and overcoming the dualism of the education system.	Epistemological-Academic: Breaking the deadlock of scientific fragmentation in higher education.	Axiological-Transformative: Providing concrete solutions to humanitarian crises in the field.
Attitude towards Modern (Western) Science	Critical-Deconstructive (Filtering secular bias and incorporating divine values).	Open-Communicative (Making modern science a dialogue partner, mutually greeting and correcting).	Proactive-Emancipatory (Using science as a tool for social liberation bound by divine ethics).

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Relevance to Social Problem Solving	Instilling a foundation of divine ethics so that science does not escape moral control, though its implementation still tends to be theoretical-normative.	Providing a multidimensional framework so that students do not view social phenomena singularly or dichotomously.	Providing an immediately executable methodology to advocate for issues of poverty, injustice, and ethical degradation.
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Based on Table 1, it is evident that there is a linear and mutually refining shift. Al-Faruqi's ideas serve as the basic foundation, Amin Abdullah builds its academic infrastructure, and Kuntowijoyo provides the spearhead for its operationalization in society. *(Note: The duplicated sentence in the source text has been merged for clarity).*

These three schools of thought—when drawn together in a single common thread—do not negate one another but form a complete and comprehensive epistemological evolution of Islamic education. The framework of *Tawhid* from Al-Faruqi provides the basic ontological foundation ensuring that all derivations of knowledge are inseparable from divine values. The Integration-Interconnection paradigm of Amin Abdullah provides a dialogical methodology so that learners can absorb the advancements of modern science and technology without losing their Islamic identity. At its peak, Kuntowijoyo's Prophetic Social Science provides an axiological direction so that the integration of knowledge is grounded and produces research capable of concretely solving social problems. The convergence of these three paradigms yields a holistic scientific integration model. This epistemological construction shifts the orientation of Islamic education from mere cognitive knowledge transmission to social engineering.

2. Discussion

a. Relevance of Findings to the Research Objectives (What & How)

This research has been oriented from the outset to answer the fundamental question outlined in the Introduction: how to formulate a comprehensive model of knowledge integration so that students not only master texts but are also capable of solving social problems and developing new theories in the modern era. The results of the evolutive exploration of the thoughts of the three figures—Al-Faruqi, Amin Abdullah, and Kuntowijoyo—answer this objective precisely.

The findings of this study indicate that the resolution of social problems cannot be achieved merely by relying on a single phase of thought. Students and academics must operationalize these three paradigms sequentially: utilizing the *Tawhidic* framework (Al-Faruqi) as an ontological foundation so that the developed theories do not lose their ethical direction; applying interdisciplinary dialogue (Amin Abdullah) as an epistemological methodology to absorb modern science; and practicing Prophetic Social Science (Kuntowijoyo) as an axiological analytical tool to concretely mitigate social crises. Thus, the results of this research provide a theoretical roadmap for advanced learning outcomes, where the development of knowledge must culminate in social utility.

b. Scientific Interpretation of the Paradigm Shift (Why)

Scientifically, why must this shift from Islamization towards Interconnection, culminating in Prophetic Social Science, occur? These findings can be interpreted as a form of epistemological maturity within the intellectual tradition of Islamic education.

Al-Faruqi's (1982) initiation phase was a psychological-defensive response to the hegemony of Western secular science. This approach was highly necessary in its time to build a scientific "fortress of identity". However, in terms of rational methodology, mere purification does not provide the technical instruments to solve real problems such as structural poverty or ethical crises in the digital era. This need for technical instruments is what drove the birth of Amin Abdullah's (2006) spider web methodology. Science and philosophy are no longer forcibly "Islamized," but rather invited into dialogue.

An overly theoretical academic dialogue risks becoming an elitist "ivory tower." Therefore, this epistemology must inevitably evolve towards a transformative axiology as formulated by Kuntowijoyo (2001). This shift occurs because the essence of knowledge in genuine Islamic epistemology never separates knowledge (*'ilm*) from actions of social liberation (*'amal*).

c. The Position of Findings Among Previous Discourses (What Else)

The results of this study are consistent with several previous studies that critique the fragmentation of Islamic education, yet they also offer a significant distinction. The majority of previous studies tend to position the thoughts of these figures in a binary or isolated manner. For instance, previous expert studies often merely contrasted Al-Faruqi's Islamization of Knowledge with Naquib al-Attas's Dewesternization (Had, 2019; In'Ami et al., 2025; Kosim et al., 2020; Saif, 2024), or exclusively examined the effectiveness of Amin Abdullah's interconnection paradigm within the environment of Islamic Higher Education Institutions (Ayu et al., 2024; Rahmani et al., 2026; Rahmat et al., 2026).

The fundamental difference and novelty of these findings lie in the linking of these three figures into a linear and complementary continuum. This research refutes the assumption that Amin Abdullah's interconnection paradigm or Kuntowijoyo's prophetic paradigm invalidates Al-Faruqi's Islamization project. Conversely, this study proves that the three are evolutionary stages that must be integrated into the higher education curriculum to produce holistic learning evaluation instruments—from the cognitive-spiritual domain to the psychomotor-social domain.

d. Contextual Implications and Future Research Directions (Broader Context & Future Research Directions)

This synthesis of epistemological evolution has strategic implications for curriculum engineering and the development of national education evaluation standards. This tripartite integration model can be used as a theoretical foundation in Research and Development (R&D) to construct evaluation instruments for student character and social problem-solving, so that assessment is no longer mechanical but touches upon the essence of ethical behavior.

Conclusion

The conclusion of this research affirms that the reconceptualization of Islamic education in responding to the complexities of modernity cannot be accomplished through a partial or singular paradigm. The epistemological evolution from the Islamization of Knowledge (Al-Faruqi), to Integration-Interconnection (Amin Abdullah), and culminating in Prophetic Social Science (Kuntowijoyo) forms a complete methodological continuum. The primary finding (research discovery) of this analytical synthesis is the construction of a tripartite "Prophetic Integration" model. This model shifts the orientation of religious education from mere textual-cognitive transmission towards concrete social engineering. This framework provides both a philosophical and tactical answer that every theoretical formulation developed within the academic environment must possess a *tawhidic* ontological foundation, openly embrace the dialogue of modern science, and be oriented towards the axiology of social liberation.

Moving forward, it is highly recommended that future research test this theoretical synthesis through an empirical approach. Further studies could employ the Research and Development (R&D) method to design a teaching module or an automated evaluation instrument based on "Prophetic Integration" to be directly tested in the learning process. Additionally, field research to measure the effectiveness of this model on students' abilities in responding to contemporary global issues (such as the ethics of artificial intelligence and social conflict resolution) will be highly crucial to complement this library research.

References

- Abdullah, M. A. (2006). *Islamic studies di perguruan tinggi: Pendekatan integratif-interkoneksi*. Pustaka Pelajar.
- Al-Faruqi, I. (1988). *Islamization Of Knowledge General Principles and Work Plan* (Third Edit). International Graphics. https://www.muslim-library.com/dl/books/English_Islamization_of_Knowledge_General_Principles_and_Work_Plan.pdf
- Ayu, A., Permatasari, D., & Maulida, H. S. (2024). Integration of Islamic sciences according to M. Amin Abdullah and its implications for Islamic universities. *Jurnal Asy-Syukriyyah*, 25(1), 62–76. <https://doi.org/https://doi.org/10.36769/asy.v25i1.475>
- Creswell W. J. and Creswell J. D. (2018). Qualitative, quantitative, and mixed methods approaches. *Research Design Qualitative Quantitative and Mixed Methods Approaches*. In *Research Design* (Vol. 5, Issue June). SAGE Publications.
- Effendi, M. R., Aulia, R. N., Amaliyah, A., & Salsabila, N. F. (2023). Integrasi Pendidikan Islam Berbasis Ilmu Sosial Profetik dalam Penguatan Keberagamaan Mahasiswa. *Muttaqien; Indonesian Journal of Multidiciplinary Islamic Studies*, 4(2), 161–176. <https://doi.org/https://doi.org/10.52593/mtq.04.2.06>
- Glyptou, K. (2025). Technology-Enabled Sustainability: Behavior-Based Carbon Footprint Levy in Hotels. *Strategic Change*, 34(4), 597–607. <https://doi.org/10.1002/jsc.2641>
- H.E. Bahruddin dan Asep Saepul H. (2016). Metodologi Penelitian Kuantitatif (Aplikasi Dalam Pendidikan). In *Deeppublish*. Deeppublish. <https://www.google.com/books?hl=id&lr=&id=nhwaCgAAQBAJ&oi=fnd&pg=PR6&dq=menyatakan+terkait+metode+sendiri+yang+memiliki+makna+sebagai+sistem+kerja+dalam+pemakaian+suatu+objek+yang+akan+menjadi+target+ilmu+terkait.+Oleh+karenanya+dengan+pertimbangan+kesesu>
- Had, A. Bin. (2019). The utopia of islamization: Between distant ideas and inept theories. *International Journal of Innovation, Creativity and Change*, 9(4), 273–289. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85080122916&partnerID=40&md5=9797eb4c6d814333f9e574b232bfe488>
- In'Ami, M., Bambang, null, & Wekke, I. S. (2025). Contextualising Adab in Islamic Education from the Perspective of Al-Attas. *Journal of Al-Tamaddun*, 20(1), 145–158. <https://doi.org/10.22452/JAT.vol20no1.11>
- Juschten, M., Reinwald, F., & Jiricka-Pürerer, A. (2025). Challenge accepted – identifying barriers and facilitating climate change adaptation in spatial development across planning boundaries, sectors and planning levels. *Environmental Science and Policy*, 171. <https://doi.org/10.1016/j.envsci.2025.104152>
- Kosim, M., Kustati, M., & Murkilim, null. (2020). Syed Muhammad Naquib Al-Attas1 Ideas On The Islamization Of Knowledge And Its Relevance With Islamic Education In Indonesia. *Miqot: Jurnal Ilmu-Ilmu Keislaman*, 44(2), 250–267. <https://doi.org/10.30821/miqot.v44i2.724>

- Matthew B. Miles, A. Michael Huberman, and J. S. (2014). *Qualitative Data Analysis: A Methods Sourcebook* (Third Edit). SAGE Publications, Inc.
- Muslih, M., Khakim, U., & Sahidin, A. (2024). An In-Depth Analysis Of Al Faruqi's Theory Of Islamization Of Knowledge: A Perspective From Thomas Kuhn's Paradigm Shift Theory. *Hamdard Islamicus*, 47(1), 27–49. <https://doi.org/10.57144/hi.v47i1.436>
- Nisa, A., & Ibrahim, R. (2025). Scientific Integration of Perspectives M. Amin Abdullah (Integrative-Interconnective Approach). *Al-Afkar, Journal For Islamic Studies*, 8(1), 298–306. <https://doi.org/https://doi.org/10.31943/afkarjournal.v8i1.1023>
- Pan, S., Hafez, B., Iskandar, A., & Ming, Z. (2024). Integrating constructivist principles in an adaptive hybrid learning system for developing social entrepreneurship education among college students. *Learning and Motivation*, 87, 102023. <https://www.sciencedirect.com/science/article/abs/pii/S0023969024000651>
- Rahman, G. (2025). Reconstructing Islamic Identity in Modern Times: A Narrative Review of Educational Reform and Intellectual Responses. *Sinergi International Journal of Islamic Studies*, 3(1), 29–43. <https://doi.org/https://doi.org/10.61194/ijis.v3i1.708>
- Rahmani, D. A., Najmi, V. N., & Dewi, E. (2026). Reconstructing Islamic Epistemology: A Philosophical Analysis of Amin Abdullah's Integrative-Interconnected Paradigm. *Jurnal Pendidikan Agama Islam Al-Thariqah*, 11(1), 169–182. [https://doi.org/https://doi.org/10.25299/althariqah.2026.vol11\(1\).27798](https://doi.org/https://doi.org/10.25299/althariqah.2026.vol11(1).27798)
- Rahmat, A., Bakar, M. Y. A., Mas'ud, A., & Karomah, F. F. (2026). Integration-Interconnection Paradigm as An Academic Strategy in The Deradicalization of Religious Thought in Islamic Higher Education. *Jurnal Cendekia Media Komunikasi Penelitian Dan Pengembangan Pendidikan Islam*, 18(01), 177–192.
- Riyanto, W. F. (2025). Intersubjective Social Science and Divine Foundations in Indonesia: A Civilisational Reading Of Ibn Khaldūn and Kuntowijoyo. *Al-Shajarah*, 30(2), 421–456. <https://doi.org/10.31436/shajarah.v30i02.1766>
- Rosanawati, I. M. R., Wardo, W., Djono, D., & Purwanta, H. (2025). Pedagogical Model Innovation Based on Ki Hajar Dewantara's Among System for History Learning in the Merdeka Curriculum. *Educational Process: International Journal*, 14. <https://doi.org/10.22521/edupij.2025.14.39>
- Saif, L. (2024). The past and future of the study of Islamic esotericism. *Religion Compass*, 18(7). <https://doi.org/10.1111/rec3.12494>