The Integration of Karl Popper's Falsification Theory in the Reconstruction of Modern Islamic Educational Epistemology

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Abstract: This study explores the integration of Karl Popper's falsification theory in the reconstruction of the epistemology of modern Islamic education as a methodological strategy to respond to dogmatic tendencies and stagnation in the development of Islamic scientific discourse. With a qualitative approach based on literature studies, this study confirms that falsification functions as an evaluative instrument that allows for critical and contextual re-examination of the validity of Islamic theories. The main findings show that the application of falsification encourages a more adaptive curriculum reformulation to social dynamics and scientific progress, while facilitating the creation of a dialogical learning space, where students play an active role as subjects seeking truth. This principle also strengthens the integration between rationality and revelation through an epistemological framework based on ijtihad and tajdid. Thus, falsification not only provides a methodological contribution to the development of science but also presents a solid philosophical foundation for the development of an Islamic education system that is reflective, progressive, and open to scientific innovation, without neglecting the transcendental values that are its characteristics. The primary limitation of this study lies in its conceptual-theoretical nature, necessitating empirical field research to validate this epistemological model within tangible Islamic educational institutions.

Abstrak: Penelitian ini mengeksplorasi integrasi teori falsifikasi Karl Popper dalam rekonstruksi epistemologi pendidikan Islam modern sebagai strategi metodologis untuk merespons kecenderungan dogmatis dan stagnasi dalam pengembangan wacana keilmuan Islam. Dengan pendekatan kualitatif berbasis studi pustaka, penelitian ini menegaskan bahwa falsifikasi berfungsi sebagai instrumen evaluatif yang memungkinkan pengujian ulang terhadap validitas teori keislaman secara kritis dan kontekstual. Temuan utama menunjukkan bahwa penerapan falsifikasi mendorong reformulasi kurikulum yang lebih adaptif terhadap dinamika sosial dan kemajuan ilmu pengetahuan, sekaligus memfasilitasi terciptanya ruang belajar yang dialogis, di mana peserta didik berperan aktif sebagai subjek pencari kebenaran. Prinsip ini juga memperkuat integrasi antara rasionalitas dan wahyu melalui kerangka epistemologis yang berbasis pada ijtihad dan tajdid. Dengan demikian, falsifikasi tidak hanya memberikan kontribusi metodologis terhadap pengembangan ilmu, tetapi juga menghadirkan fondasi filosofis yang kokoh bagi pembangunan sistem pendidikan Islam yang reflektif, progresif, dan terbuka terhadap inovasi ilmiah, tanpa mengesampingkan nilai-nilai transendental yang menjadi ciri khasnya. Keterbatasan utama studi ini adalah sifatnya yang konseptual-teoretis, sehingga diperlukan penelitian lapangan untuk memvalidasi model epistemologi ini di lembaga pendidikan Islam nyata.

1. Introduction

In the tradition of Western thought, efforts to determine the boundaries of valid knowledge have given rise to various paradigms and methodologies aimed at ensuring scientific truth. Francis Bacon asserted that reliable scientific knowledge can only be obtained through inductive methods based on experimentation and empirical

observation.[1] This view differs from Cartesian Rationalism, which places epistemic certainty on clear and rational ideas.[2] Furthermore, the Positivist movement strengthened the notion that knowledge can only be considered true if it meets scientific criteria such as observability, measurability, repeatability, testability, and predictability.[3] These developments culminated in logical positivism within the Vienna Circle, which emphasized the verification principle as the basis for the meaningfulness of a proposition.[4]

However, the positivist approach did not escape criticism from major thinkers such as Karl Popper, Thomas Kuhn, W.V. Quine, Ferdinand de Saussure, and Jacques Derrida.[5] Popper firmly rejected the verification principle and proposed falsification as the main tool for distinguishing science from non-science. [6] Kuhn criticized the assumption of linear scientific progress, while Quine and Derrida questioned positivist assumptions regarding language and reality.[7] These critiques indicate that overly rigid epistemological approaches are no longer adequate for explaining the dynamics of knowledge, including in the context of education, particularly Islamic education.

At the same time, various studies over the past two decades show that the epistemology of Islamic education continues to be dominated by textualism and dogmatic authority. everal works—such as those by Abd. Rahim Razaq & Umiarso[8], Rumina[9], Fajriah Inayati et al.,[10] and Slamet Pamuji[11], have attempted to reconstruct Islamic epistemology through the integration of *bayani*, *burhani*, and *irfani* approaches or through dialogical-interpretive models. However, these studies have not explained how Popper's falsification principle can be used as an evaluative mechanism to assess, critique, and renew theories of Islamic education.

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[1] Everest Turyahikayo, "Philosophical Paradigms as the Bases for Knowledge Management Research and Practice," *Knowledge Management & E-Learning: An International Journal*, June 2021, 209–24, https://doi.org/10.34105/j.kmel.2021.13.012.

[2] Muhammad Muslih, *Filsafat Ilmu Kajian Atas Asumsi Dasar Paradigma Dan Kerangka Teori Ilmu Pengetahuan* (Yogyakarta: Belukar, 2005) hlm. 90.

[3] Rene Descartes, *Discourse on Method (Diskursus Metode), Terj. Ahmad Faridl Ma'ruf* (Yogyakarta: IRCiSoD, 2003) hlm. 38.

[4] Muslih, *Filsafat Ilmu Kajian Atas Asumsi Dasar Paradigma Dan Kerangka Teori Ilmu Pengetahuan*...hlm. 79.

[5] Paul Edward, *The Encyclopedia of Philosophy* (New York: MacMillan, 1967) hlm. 52.

[6] Jorgen Jorgensen, *The Development of Logical Empiricism* (Chicago: University of Chicago Press, 1951) hlm. 6.

[7] Kees Bertens, *Filsafat Barat Abad XX* (Jakarta: Gramedia, 1981) hlm. 166.

[8] Abd. Rahim Razaq and Umiarso Umiarso, "Islamic Education Construction in the Perspective of Falsification of Karl R. Popper," *Jurnal Pendidikan Islam* 5, no. 2 (2019), https://doi.org/10.15575/jpi.v5i2.5846.

[9] Rumina, "Integrasi Epistemologi Islam Dalam Metode Pendidikan: Pendekatan Filsafat Pendidikan Islam," *Inovatif: Jurnal Penelitian Pendidikan, Agama, Dan Kebudayaan* 11, no. 2 (2025), https://doi.org/10.55148/inovatif.v11i2.1884.

[10] FajriahYasmin Harahap Inayati and Irawan, "Epistemologi Keilmuan Al-Attas Dalam Pengembangan Pendidikan Agama Islam," *Jurnal PAI Raden Fatah* 4 (2024), https://doi.org/https://doi.org/10.19109/pairf.v6i4.25188.

[11] Slamet Pamuji, "Critical Perspectives on the Rational Epistemology of Islamic Education," *International Journal of Social Sciences & Cultural Studies (IJSSCS)* 1, no. 1 (2025).

On the other hand, studies on Popper's thought, such as those by Riski[12], Muhammad Yuslih et al.,[13] and Komarudin[14] focus primarily on his contributions to the philosophy of science, scientific demarcation, and critiques of essentialism, but do not examine its application within the epistemological framework of Islamic education. The absence of a direct discussion on the integration of falsification and the reconstruction of Islamic educational epistemology highlights a significant research gap.

Based on this analysis, it becomes clear that no previous study has specifically examined how Karl Popper's falsification can be integrated into the epistemology of Islamic education as a methodological tool to overcome epistemological stagnation, test the validity of theories, and open space for renewal and scientific dynamism. This constitutes the novelty of the present study, which offers an integrative model combining falsification with Islamic epistemological traditions to formulate an educational approach that is more critical, reflective, and adaptive to contemporary changes. Accordingly, this study aims to analyze Popper's falsification theory and conceptualize its integration into the epistemology of modern Islamic education as a methodological strategy to strengthen the culture of critique, renewal, and knowledge development in Islamic education.

2. Method

This study employs a qualitative philosophical approach using theoretical–conceptual analysis. This method is chosen because the research focuses on Karl Popper's ideas and the possibility of integrating them into the epistemology of Islamic education, rather than on empirical data.

The primary sources of this study are Karl Popper's original works, including *The Logic of Scientific Discovery*, *Conjectures and Refutations*, *Objective Knowledge*, *The Open Society and Its Enemies*, and *Unended Quest*. These sources are used to directly examine Popper's concepts of falsification and epistemology. Secondary sources consist of reputable journal articles, books on the philosophy of science, studies on Popper, and works on the epistemology of Islamic education. These sources provide theoretical reinforcement and help identify the existing research gap.

The analytical techniques used in this study include conceptual analysis to examine meanings, logical relationships, and the internal coherence of ideas, as well as philosophical hermeneutics to interpret the relevance of Popper's thought within the Islamic epistemological tradition. Since this research is text-based rather than field-based, techniques such as triangulation or data-reduction models are not employed. The validity of the analysis is maintained through argumentative consistency and accurate interpretation of authoritative sources.

3. Results

This section presents the findings regarding the integration of Karl Popper's principle of falsification within the modern Islamic education epistemology. The analysis begins by establishing the socio-intellectual foundation of Popper's falsification theory, highlighting its critical role in demarcating science from non-science through the lens of refutability (Section 3.1 and 3.2). Subsequently, the discussion delves into the inherent

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[12] Maydi Aula Riski, "Falsifikasi Karl R. Popper Dan Urgensinya Dala Dunia Akademik," *Jurnal Filsafat Indonesia* 4, no. 3 (November 2021): 261–72, https://doi.org/10.23887/jfi.v4i3.36536.

[13] Muhammad Yuslih et al., "Epistemologi Pemikiran Karl r Popper Dan Relevansinya Dengan Pemikiran Islam 1" 2, no. 9 (2021): 438–44, https://doi.org/https://doi.org/10.36312/10.36312/vol2iss9pp438-444.

[14] Komarudin Komarudin, "Falsafikasi Karl Popper Dan Kemungkinan Penerapannya Dalam Keilmuan Islam," *At-Taqaddum* 2 (2016): 444–65, https://doi.org/10.21580/at.v6i2.720.

epistemological framework of Islamic education (Section 3.3) and critically examines the pervasive dogmatic challenges it faces (Section 3.4). The core finding is articulated in Section 3.5, which outlines a systematic framework for integrating falsification as a methodological instrument. This integration aims to encourage a culture of critical *ijtihad* and *tajdid* by applying the principle of fallibility to human interpretations and theories of Islam, thereby fostering a more adaptive, reflective, and scientifically progressive Islamic educational system without undermining the absolute truth of Revelation.

3.1. Socio-Cultural Constellation of Falsification Ideas

Karl Raimund Popper (1902–1994) was an Austrian-born philosopher of science widely recognized as one of the most influential critics of logical positivism. His education and intellectual environment exposed him to debates between empiricism, rationalism, and modern scientific thought. A major influence came from the development of modern physics particularly Einstein's theory of relativity which led him to realize that scientific theories can never be "proven true," but only tested and potentially refuted. [15] From this insight, he formulated the principle of falsification as the basis for demarcating science from non-science. The socio-political turmoil of Europe during the rise of totalitarianism further shaped his emphasis on critical thinking, anti-dogmatism, and intellectual openness. These ideas were later articulated in his major works, including *The Logic of Scientific Discovery*, *Conjectures and Refutations*, and *The Open Society and Its Enemies*. [16]

3.2. The Concept of Falsification in Popper's Framework of Scientific Rationality

As explained in the previous introduction, although Karl Popper was quite familiar with the thoughts of philosophers who were members of the Vienna Circle or known as logical positivists, he had a different view in the realm of science. His disagreements mainly covered three main points of thought, namely the problem of induction, the criteria of demarcation, and the concept of the third world.[17] In terms of induction, Popper rejects the validity of generalizations that rely on inductive principles.[18]

Logical positivists believe that scientific knowledge is built through induction, that is, when many phenomena A are observed under various conditions and all exhibit property B, then it is concluded that all A have property B. This principle is considered the basis for the formation of general laws based on the criterion of meaningfulness determined by the ability of a proposition to be verified empirically. A theory is considered scientific if it can be tested through observation and experiment and is able to explain and predict phenomena, such as astronomers predicting eclipses or physicists explaining the difference in the boiling point of water at high altitudes. In simple terms, the truth or scientificity of knowledge or science can be described through the following scheme:
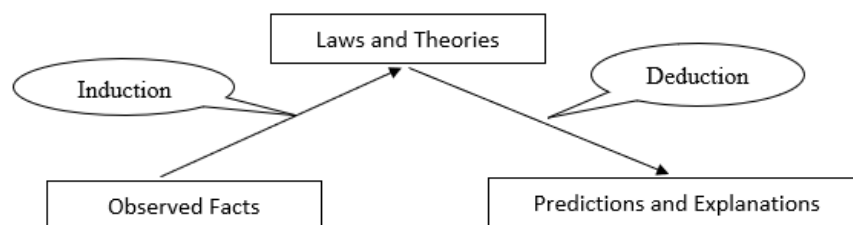

Figure 1. The Description of Science According to Logical Positivism/Inductivism

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[15] Karl Popper, *Unended Quest: An Intellectual Autobiography* (London and New York: Routledge, 2002).

[16] Karl R. Popper, *The Logic of Scientific Discovery* (London and New York: Taylor & Francis e-Library, 2005).

[17] Muhammad Muslih, *Filsafat Ilmu Kajian Atas Asumsi Dasar Paradigma Dan Kerangka Teori Ilmu Pengetahuan* (Yogyakarta: Belukar, 2005) hlm. 105.

[18] Karl R. Popper, *The Logic of Scientific Discovery*.

Figure 1. The description of science as put forward by logical positivism or inductivists implies a strong understanding of the nature of scientific knowledge. They emphasize that science has superior ability to explain and predict various phenomena and is objective and reliable when compared to other forms of knowledge. Therefore, it is not surprising that this approach has many followers and is considered very convincing. However, according to Karl Popper, a scientific theory or proposition is not automatically considered valid just because it can be proven through empirical verification as believed by positivists. Instead, the scientificity of a theory lies in its ability to be tested and refuted through a series of systematic experiments aimed at criticizing or refuting the claim.

If a hypothesis or theory successfully passes various forms of testing aimed at refuting it, then its validity will be further strengthened. This is what Karl Popper called corroboration. The harder the effort is made to refute a particular theory, but it persists, the higher the level of robustness of the theory. Popper emphasized that every scientific theory is inherently tentative or provisional—it is not an absolute truth, but merely a guess that is always open to the possibility of being improved or replaced by a better theory. Therefore, Popper prefers the term "hypothesis" to "theory" to reflect its provisional nature. He also stated that a hypothesis or proposition can only be considered scientific if it is in principle possible to refute it (*refutability*). In this framework, the theory cannot be absolutely proven through verification, but its validity is tested through the process of falsification. In simple terms, Popper's falsification is described as follows:
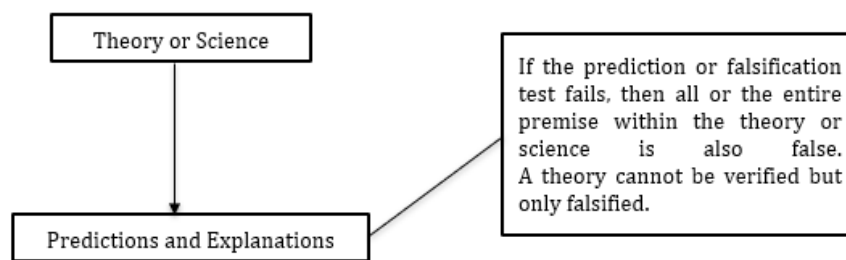

Figure 2. Popper's Falsification Model of Scientific Rationality

Figure 2. From here it can be understood that criticism of scientific theories or propositions is an inevitable part of the dynamics of science. A true scientist must not only be open to criticism, but also actively expect it. Because, only through openness to criticism can science continue to develop and improve. This criticism is a manifestation of the principle of falsification—a systematic effort to refute or disprove existing theories. In this process, what is called error *elimination*, namely the elimination of errors or inaccuracies in theory. The more intense the process of eliminating errors, the greater the opportunity for the birth of new theories that are closer to the truth.[19]

Popper argued that progress in science does not occur through the accumulation of evidence that confirms a theory, as the Positivists believed, but rather through a continuous process of correction. He drew on the history of science to support his view, notably showing how Einstein's theory of relativity replaced Newtonian physics. Although initially controversial, the scientific community eventually accepted that Einstein's theory offered a more accurate explanation of physical phenomena, replacing the previously dominant Newtonian framework.[20]

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[19] Muslih, *Filsafat Ilmu Kajian Atas Asumsi Dasar Paradigma Dan Kerangka Teori Ilmu Pengetahuan*...hlm. 107.

[20] Alexey V. Antonov, "Karl Popper and the Problem of Essentialism in Philosophy," *RUDN Journal of Philosophy* 26, no. 3 (September 2022): 672–86, https://doi.org/10.22363/2313-2302-2022-26-3-672-686.

The acceptance of Einstein's theory of relativity is clear evidence that Newton's theory in physics is not permanent. This phenomenon also shows that no scientific theory can be claimed as absolute or final truth. All scientific theories are just temporary hypotheses or conjectures, which can be interpreted as an assumption or guess (*guess*). This means that scientific propositions or theories cannot be definitively confirmed as true or false but are merely conjectures that are still open to the possibility of truth or error. Because they are tentative, every theory is legitimate to be abandoned if another theory emerges that is more effective in explaining empirical reality.

This view is certainly in sharp contrast to the positive approach, which establishes scientific criteria based on the ability of a theory to be verified through empirical evidence. Popper rejected this approach and highlighted the weaknesses inherent in the logical positivists' verification principle. First, he argued that verification can never ensure the truth of universal laws. Consequently, the entire structure of natural science, which is largely built on general laws, would lose its meaning, like metaphysical statements. Second, Popper showed that throughout history, metaphysical thinking, which positivism considers meaningless, has often been the starting point for the birth of various new branches of science. In fact, expressions that are metaphysical, religious, or mystical can be considered meaningful if they can withstand various forms of rational testing. Third, to determine whether a proposition is meaningful or not, the basic prerequisite is that the proposition can be understood. If it cannot be understood, then it cannot be judged as meaningful or vice versa.[21]

On this basis, Popper then proposed the principal falsifiability as a demarcation between scientific and unscientific theories. A scientific theory or proposition must have the potential to be refuted, that is, be open to being proven wrong. As long as the theory cannot be disproved through falsification, the theory is still considered valid, although Popper asserts that its temporary nature will never disappear. In R. Henry's view, the resistance of a theory to falsification efforts is a measure of its strength, although its existence is not absolute.

According to Karl Popper, a theory can only be called scientific if it is in principle possible to refute or prove wrong. This principle is known as falsification. Conversely, if a theory or proposition does not allow logical refutation, then it is not included in the scientific realm. This falsification approach has direct consequences for the understanding of the development of science. For Popper, scientific progress is not the result of accumulating facts or supporting evidence, but rather through the systematic elimination of errors. Science develops because hypotheses that are tested and proven wrong are abandoned, then replaced by other theories that are more adequate in explaining reality.

Thus, scientific activity is essentially a process of continuous improvement through the reduction of errors. Science never arrives at absolute truth but always approaches it gradually. In this framework, falsification serves as a demarcation tool between true science (*genuine science*) and pseudoscience (*pseudoscience*). As Popper put it, "science is a continuous revolution, and criticism is the essence of all scientific activity." Thus, a scientific theory must meet three main requirements: it can be refuted (*falsifiability*), can be refuted (*refutability*), and can be tested (*testability*).

This idea places Popper as one of the central figures in the rational-critical epistemology tradition as well as a modern empiricist. In addition to discussing the issue

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[21] Karl R. Popper, *The Open Society and Its Enemies* (Princeton and Oxford: Princeton University Press, 2013).

of induction and the boundaries of science (demarcation), Popper also introduced the concept of the "third world" within the framework of epistemology. Unlike the third world term in the context of geopolitics, Popper's third world refers to the realm of ideas and intellectual products. He divides reality into three worlds: the first world contains physical objects; the second world includes mental conditions or subjective human experiences; and the third world includes cognitive works such as theories, hypotheses, scientific laws, art, religion, and culture.

The third world, according to Popper, is not passive; it gains meaning when experienced through intellectual activities such as reading, researching, creating, or contemplating. The results of that experience will settle in tangible forms such as books, scientific devices, or works of art—which return to the first world. However, when re-understood by the human mind, it comes back to life in the third world through the consciousness that resides in the second world. Popper tries to get out of the extreme poles of objectivism, which considers natural laws to be entirely inherent in physical reality, and subjectivism, which believes these laws are entirely the result of human construction.[22] For Popper, humans move progressively towards a closer understanding of the truth. Through the mechanism of falsification, errors in a theory can be identified and the theory will be abandoned if it is proven to be no longer valid. A newer theory that is better able to explain the facts will replace it. This process is what continues in science, as a never-ending effort towards a more objective truth.

3.3. Epistemology of Islamic Education

Epistemology in the Islamic tradition is a branch of philosophy that discusses in depth the sources, methods of obtaining, and validity of knowledge that originates from Allah SWT as the creator of all knowledge.[23] In Islam, knowledge is not merely worldly and empirical, but also transcendental and comes from revelation. Therefore, the epistemology of Islamic education cannot be separated from the theological dimension, where education is seen as a guidance process directed at developing human potential to become a perfect human being, a perfect human being according to divine values.[24]

The framework of Islamic epistemology is built on three main approaches, namely *bayani*, *irfani*, and *burhani*. The bayani approach emphasizes the authority of the revealed text (the Qur'an and Hadith) as the highest source of knowledge, with an interpretation method based on linguistics and the principle of *istinbath*.[25] The *irfani* approach positions intuition and spiritual experience as a path to gaining inner knowledge through *kasyf* and inspiration.[26] While the *burhani* approach relies on the power of reason and rationality as a means to find and prove the truth logically. These three approaches complement each other and reflect the integrative character of Islamic epistemology.

The source of knowledge in Islamic education includes four main elements: senses, intellect, true news (revelation and *mutawatir hadith*), as well as intuition or

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[22] Moisés Pérez, "La Verdad Práctica y El Mundo 3 de Karl Popper," *Contrastes. Revista Internacional de Filosofía* 28, no. 3 (February 2023): 63–81, https://doi.org/10.24310/Contrastescontrastes.v28i3.15671.

[23] Hamza R'boul, Osman Z. Barnawi, and Benachour Saidi, "Islamic Ethics As Alternative Epistemology In Intercultural Education: Educators' Situated Knowledges," *British Journal of Educational Studies* 72, no. 2 (March 2024): 199–217, https://doi.org/10.1080/00071005.2023.2254373.

[24] Rohmat Mulyana and Umiarso, *Epistemologi Pendidikan Islam Ke Integraistik-Interkonektif Dari Metode Parasialistik Ke Teoantriposentris; Dari Paradigma Teosentris* (Bandung: PT Remaja Rosdakarya, 2023) hlm. 9.

[25] A. Khudori Soleh, *Filsafat Islam: Dari Klasik Hingga Kontemporer* (Yogyakarta: Ar-Ruzz Media, 2013) hlm. 237.

[26] Sirajuddin Zar, *Filsafat Islam Filosof Dan Filsafatnya* (Jakarta: Raja Grafindo Persada, 2012) hlm. 219.

inspiration.[27] The five senses provide empirical data, while the mind is tasked with processing it rationally. Revelation as an absolute source becomes the main foundation in forming a framework of thought and values in education. Intuition or inspiration, although subjective, is recognized to obtain valid spiritual knowledge, if it does not conflict with revelation. Thus, the epistemology of Islamic education opens a balanced space between rationality, spirituality, and empiricism.[28]

In practice, Islamic educational epistemology uses various methods to acquire knowledge, such as rational, intuitive, dialogical, comparative, and critical methods. The rational method emphasizes the importance of reason in understanding the reality and laws of education. The intuitive method highlights the role of conscience and inner experience. The dialogical method fosters critical thinking through the interaction of ideas. Meanwhile, comparative and critical methods are used to compare and evaluate various educational concepts or practices to obtain a more precise and contextual formulation.[29]

The epistemology of Islamic education aims to produce true and useful knowledge, by prioritizing the principle of truth that comes from Allah. Truth in Islamic education is not only assessed from empirical or logical aspects alone, but also from its conformity with Islamic revelation and values. With this integrative approach, the epistemology of Islamic education not only creates humans who are intellectually intelligent, but also moral, have noble character, and are able to carry out their role as caliphs on earth responsibly.

3.4. Problems in the Epistemology of Islamic Education

One of the main problems facing modern Islamic education is its dogmatic tendencies and resistance to criticism. Many curricula and pedagogical approaches are still trapped in the traditional model of knowledge inheritance, with no room for re-examining the truth or reconstructing understanding rationally.[30] In this context, Karl Popper's falsification approach becomes relevant. Popper rejects the concept of verification as the only benchmark for scientific truth and offers falsification as a method for filtering out knowledge that cannot stand the test. When applied in the epistemology of Islamic education, this approach encourages open thinking to criticism, reconsideration of religious understanding, and conceptual renewal without abandoning the value of revelation.

Modern Islamic education also faces a sharp dichotomy between religious and general knowledge, as well as the dominance of the textualist *bayani* approach. As a result, Islamic epistemology does not develop fully because the *irfani* (spiritual) and *burhani* (rational) approaches do not get a balanced portion. Popper's falsification approach can be a reflective tool to evaluate how epistemics work in contemporary Islamic education. He offers the principle of openness to error and the courage to revise theories, which are in line with the principles of ijtihad and *tajdid* (renewal) in Islam.

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[27] Umi Kulsum, "Epistemologi Islam Dalam Tinjauan Filosofis," *Urwatul Wutsqo: Jurnal Studi Kependidikan Dan Keislaman* 9, no. 2 (September 2020): 229–41, https://doi.org/10.54437/urwatulwutsqo.v9i2.185.

[28] Khairul Fahmi, Salminawati Salminawati, and Usiono Usiono, "Epistemological Questions: Hubungan Akal, Penginderaan, Wahyu Dan Intuisi Pada Pondasi Keilmuan Islam," *Journal of Education Research* 5, no. 1 (February 2024): 570–75, https://doi.org/10.37985/jer.v5i1.753.

[29] Hasan Bakti Nasution, "Metode Dialogis Dalam Epistemologi Islam," *AR-RASYID : Jurnal Pendidikan Agama Islam* 1, no. 2 (November 2021), https://doi.org/10.30596/arrasyid.v1i2.8738.

[30] Muzawir Munawarsyah, "Islamic Education in the Modern Era: Analysis of Student Character and Their Role in Facing the Challenges of Industry 4.0," *HEUTAGOGIA: Journal of Islamic Education* 3, no. 2 SE-Articles (December 2023): 141–54, https://doi.org/10.14421/hjie.2023.32-01.

Thus, falsification is not a threat to revelation, but rather a scientific method that can strengthen the integrity and relevance of Islamic knowledge in the modern world.[31]

The integration of Popper's falsification into the epistemology of Islamic education must be carried out by clearly distinguishing between revelation as sacred text and human understanding of that revelation. In Islam, the Qur'an is regarded as absolute truth (*al-ḥaqq al-muṭlaq*), which is not subject to empirical testing or falsification. Therefore, revelation belongs to the domain of metaphysics and theological truth, not to science in the Popperian sense. What is tentative and open to critique, however, are the interpretations, reasoning processes, and theoretical constructions developed by humans in their efforts to understand and expand Islamic knowledge. It is at this level that the principle of falsification can operate not to test the truth of revelation, but to examine scientific claims, theories, assumptions, and methodological frameworks in Islamic education that emerge from human interpretive activity. With this ontological separation between absolute revelation and fallible interpretation the application of falsification does not conflict with Islamic teachings. Instead, it strengthens critical thinking, anti-dogmatic attitudes, and methodological openness in the development of Islamic educational epistemology.

Another problem is the absence of a sharp epistemic evaluation of the teaching materials and knowledge structures taught in Islamic educational institutions. Without a systematic critical mechanism, the education system tends to maintain old paradigms that are less relevant to contemporary reality. This is where the urgency of Popper's falsification integration lies: as a methodological principle to revise or even overthrow Islamic educational theories that are no longer contextual, while simultaneously opening up space for the integration of contemporary sciences within an Islamic framework. This is also part of the reconstruction of epistemology, which aims to rearrange the way of viewing knowledge in a more open, critical, and adaptive way.

Therefore, the reconstruction of the epistemology of modern Islamic education through Popper's falsification approach is not merely a methodological innovation, but also a philosophical necessity. It provides a new framework for reviewing the validity, logic, and function of science in Islamic education more progressively. By integrating falsification, Islamic education is directed to become an active, transformative, and non-anti-critical intellectual space—and still upholds the value of revelation as a spiritual foundation. This approach is expected to be able to answer the epistemological crisis in modern Islamic education and prepare a generation of Muslims who are better prepared to face the challenges of the times scientifically, religiously, and rationally.

3.5. Integration of Falsification in the Framework of Modern Islamic Educational Epistemology

The integration of Karl Popper's falsification principle into the framework of Islamic educational epistemology is a methodological effort to overcome the stagnation of contemporary Islamic scientific discourse which is still often trapped in a textual-dogmatic approach. Popper rejected the principle of verification as the main benchmark in assessing scientific truth, and replaced it with falsification, namely, the ability of a theory to be tested and refuted. In the context of Islamic educational epistemology, this approach can be used to revive the tradition of scientific criticism and ijtihad which has been marginalized by authoritarian and ahistorical mindsets.

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[31] Hellen Tiara and Danu Danu, "Epistemology of Islamic Education: Criticism and Alternative Solutions," *HEUTAGOGIA: Journal of Islamic Education* 3, no. 1 (June 30, 2023): 115–26, https://doi.org/10.14421/hjie.2023.31-09.

The application of Popper's falsification does not contradict Islamic values but rather complements the dynamics of healthy science. The Islamic tradition itself recognizes the principles of *tajdid* (renewal), ijtihad (critical analysis), and *muhasabah* (self-evaluation) as forms of internal criticism of religious understanding and practice. In other words, the spirit of falsification has been part of the intellectual ethos of Islam since classical times. Through falsification, Muslim students and scientists are encouraged to dare to test the validity of a theory or interpretation, not simply accept it as a final dogma. In the structure of Islamic epistemology, there are three main approaches: bayani, irfani, and *burhani*. The dominance of *bayani* based on the authority of the text is often an obstacle in the development of critical and rational thinking.[32] Falsification can serve as a bridge between *bayani* and *burhani* approaches, by strengthening text-based scientific arguments through rational and logical tests. Meanwhile, the *irfani* approach that relies on spiritual intuition can also be criticized epistemologically through the principle of falsifiability so as not to fall into subjectivism that is free from scientific criteria.

In the realm of educational practice, falsification provides the basis for creating a teaching model that is not only transmissive (conveying knowledge), but also transformational.[33] Teachers are no longer positioned as the sole authority of truth, but rather as facilitators who encourage students to think critically, ask questions, test, and even challenge the theories or opinions taught. This approach creates a classroom as a laboratory of thought, not just a place for memorization. Islamic values remain the foundation, but do not become a barrier to the dynamics of scientific thinking.[34] The Islamic education curriculum developed based on the principle of falsification will be dynamic and contextual.[35] For example, the classical educational theory of previous scholars is not immediately considered final but can be reviewed based on the challenges of the times. Thus, the curriculum does not only repeat tradition but also produces new discourse that is more relevant and solution oriented. Falsification becomes a tool for evaluating the relevance of theory, not just destructive criticism, but also opening the way to epistemological refinement.

Furthermore, the application of falsification in Islamic scientific studies has a high urgency. It is an important instrument for students and intellectuals in actualizing their understanding of the Qur'an and Hadith. In an era marked by rapid technological advances and intellectual dynamics, scientists, thinkers, and students are required to work harder to justify the truth of religious texts. This is where the principle of falsification offers a significant contribution: it not only strengthens the validity of the contents of the Qur'an and Hadith but also becomes an analytical tool in enriching Islamic scientific discourse. This concept has even been widely applied in scientific forums, including critical and constructive academic discussions and debates.

The integration of falsification also opens opportunities for interdisciplinary approaches in Islamic education. Contemporary sciences such as educational psychology, sociology, and neuroscience can be integrated into Islamic studies with an open and reflective approach. Thus, Islamic epistemology no longer stands in isolation but becomes part of a global knowledge network that maintains identity and integrity. Popper's

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[32] Ahmad Syahid, "Konsep Epistemologi Keilmuan Islam Muhammad Abid Al-Jabiri," *Aqlania* 12, no. 1 (June 2021): 53, https://doi.org/10.32678/aqlania.v12i1.3950.

[33] Tiara and Danu, "Epistemology of Islamic Education: Criticism and Alternative Solutions."

[34] Riski, "Falsifikasi Karl R. Popper Dan Urgensinya Dala Dunia Akademik."

[35] M. Amin Abdullah, "Islamic Religious Education Based on Religious Intersubjectivity: Philosophical Perspectives and Phenomenology of Religion," *Jurnal Pendidikan Agama Islam* 19, no. 1 (June 2022): 141–64, https://doi.org/10.14421/jpai.2022.191-11.

principal functions as a guardian of dynamics and a guardian of quality: Islamic educational theories that are unable to answer empirical and logical challenges can be abandoned and replaced with stronger theories.

The application of Popper's falsification principle in the epistemology of Islamic education is not an attempt to secularize or weaken the value of revelation, but rather a philosophical strategy to strengthen the relevance and vitality of Islamic knowledge in a modern context. Falsification helps build a scientific culture that is open to error and renewal. In the long term, this approach is expected to be able to create a generation of Muslim intellectuals who are scientifically resilient, open in thought, and remain steadfast in spiritual values. Thus, the integration of Popper's falsification can be an important pillar in the reconstruction of a modern, critical, and inclusive epistemology of Islamic education

4. Discussion

This study investigates whether and how Karl Popper's principle of falsification can be integrated into a reconstructed epistemology of modern Islamic education to counteract dogmatism and intellectual stagnation. The research question is situated against a well-documented body of literature that characterizes Popper as a critic of verificationism, an advocate of conjectures and refutations, and a proponent of critical openness shaped by scientific and socio-political developments of the twentieth century. Concurrently, the study locates Islamic educational epistemology within its classical tripartite modalities—*bayani* (textual-hermeneutic), *irfani* (experiential-spiritual), and *burhani* (rational-demonstrative)—and emphasizes the theological status of revelation alongside human interpretive activity. By bringing these two intellectual trajectories into dialogue the research aims to specify the level at which falsification is epistemically appropriate (that is, on human interpretations and theories, not on revelation itself). The background therefore frames the inquiry as a methodological and philosophical enquiry into how scientific rationality and religious epistemic norms might be reconciled without diminution of either domain.

The principal findings indicate that Popperian falsification offers a practicable methodological instrument for revitalizing critical habits within Islamic educational epistemology while preserving the ontological integrity of revelation. Empirical and conceptual analyses conducted in the study show that falsification is most coherently applied to human-derived interpretations, pedagogical theories, and curricular constructs rather than to the Qur'an and Hadith as metaphysical sources. The results further reveal that integrating falsification can mediate the dominance of *bayani* approaches by strengthening the *burhani* dimension and by subjecting *irfani* claims to epistemic standards that prevent ungrounded subjectivism.[36] An unexpected but important finding was the degree to which classical Islamic intellectual resources—such as the norms of *ijtihād*, *tajdīd*, and *muḥāsabah*—already embody an ethos compatible with Popper's emphasis on critique and revision. Collectively, these outcomes suggest a feasible pathway for epistemic reform that is both intellectually rigorous and religiously respectful.[37]

When compared with prior studies on reform in Islamic pedagogy, the present results corroborate scholarship that emphasizes the historical flexibility of Islamic

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[36] Karl Popper, *Unended Quest: An Intellectual Autobiography*.
[37] Pérez, "La Verdad Práctica y El Mundo 3 de Karl Popper."

interpretive practices and the tradition's resources for self-correction.[38] The findings align with research arguing that critical methods have precedents in Islamic intellectual history and that modern renewal movements can legitimately draw on both religious and rationalist techniques.[39] Conversely, the results stand in tension with positions that portray modern scientific criteria as inherently hostile to religious epistemic claims, because the study demonstrates a principled boundary whereby scientific methods evaluate interpretive constructs rather than revelation itself.[40] This comparison thus shows convergence with pluralistic, reformist analyses and divergence from absolutist or isolationist accounts of religious education. The net effect is to situate the current study within a growing literature that sees methodological openness—rather than methodological replacement—as the most sustainable strategy for epistemic renewal.

A key explanatory mechanism identified in the study is the ontological separation between revelation (as authoritative and metaphysical) and human interpretive activity (as fallible and testable), which creates conceptual space for falsification to operate without infringing theological tenets. By locating falsifiability at the level of exegetical hypotheses, pedagogical theories, and curricular models, the approach avoids a category error that would attempt to subject revelation itself to empirical refutation.[41] This separation explains why Popperian methods can be framed as complementary rather than adversarial to Islamic epistemic commitments, because they safeguard the sacred status of texts while promoting intellectual rigor in all human-made claims. The study's analysis therefore clarifies the conditions under which falsification enhances epistemic accountability: namely, when it is normatively circumscribed and institutionally embedded in scholarly practice. These conditions, however, require careful articulation to prevent either theological encroachment into scientific domains or scientific overreach into the domain of revealed knowledge.[42]

At the pedagogical level the study explains how falsification can transform classroom dynamics by re-orienting teachers from authoritative transmitters to facilitators of critical inquiry and hypothesis testing. Practical examples drawn from curriculum analysis indicate that classroom activities structured around conjecture, refutation, and corroboration foster analytical skills without breaching doctrinal commitments.[43] This pedagogical turn produces students who are trained to evaluate arguments, test propositions against empirical or logical criteria, and understand the provisional character of many human claims—capacities that are central to contemporary scientific literacy. The significance of this transformation lies in its potential to cultivate a scholarly ethos that prizes intellectual humility, tolerates dissent, and institutionalizes mechanisms of critique within Islamic educational institutions. Nonetheless, successful pedagogical implementation depends on teacher preparedness, institutional incentives, and curricular redesign, which the study identifies as practical prerequisites.

The study also shows that curricular and disciplinary integration is an essential explanatory factor for the effectiveness of falsification in Islamic education:

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[38] Abdullah, "Islamic Religious Education Based on Religious Intersubjectivity: Philosophical Perspectives and Phenomenology of Religion."

[39] Yuslih et al., "Epistemologi Pemikiran Karl r Popper Dan Relevansinya Dengan Pemikiran Islam 1."

[40] Tiara and Danu, "Epistemology of Islamic Education: Criticism and Alternative Solutions."

[41] Razaq and Umiarso, "Islamic Education Construction in the Perspective of Falsification of Karl R. Popper."

[42] Pamuji, "Critical Perspectives on the Rational Epistemology of Islamic Education."

[43] Muzawir Munawarsyah, "Islamic Education in the Modern Era: Analysis of Student Character and Their Role in Facing the Challenges of Industry 4.0."

interdisciplinary linkages create empirical touchpoints and methodological pluralism that make critical testing meaningful. For example, incorporating findings from educational psychology, sociology, and the cognitive sciences provides empirical constraints that help distinguish robust interpretive claims from those vulnerable to refutation. Such interdisciplinarity does not dilute religious identity but rather situates Islamic knowledge within a broader epistemic ecology where theories are judged by their explanatory power and coherence. The significance of this finding is twofold: it underscores the feasibility of rapprochement between religious studies and contemporary sciences and it highlights the institutional work needed to create such connections. Caution is advised, however, because interdisciplinary engagement must be pursued with epistemic humility and clear normative boundaries to avoid methodological imperialism.

The implications of these findings extend to curriculum policy, teacher education, institutional governance, and future research agendas in Islamic education. Policymakers and curriculum designers are encouraged to incorporate modules that teach scientific reasoning, hypothesis testing, and hermeneutical reflexivity alongside classical textual studies to generate a balanced epistemic formation. Teacher training programs should be restructured to prepare educators to mediate critical inquiry while respecting theological commitments, and academic institutions should create incentives for scholarship that models conjectural critique and rigorous debate. At the research level, empirical studies are required to evaluate classroom implementations, to measure impacts on critical thinking outcomes, and to refine the normative frameworks that delimit falsification's scope within religious education. Ultimately, the integration of Popperian falsification—properly constrained and institutionally supported—offers a promising strategy for reconstructing a modern, resilient, and contextually responsive epistemology of Islamic education.

5. Conclusion

This study aims to analyze Karl Popper's falsification theory and examine its potential integration into the epistemology of modern Islamic education. The findings affirm that falsification applies only to the realm of human interpretation, while revelation remains absolute truth. With this distinction, falsification can serve as a critical tool for evaluating and refining Islamic educational theories that originate from interpretive processes. The results indicate that integrating falsification supports the development of a more open, rational, and non-dogmatic scientific culture within Islamic education. This principle contributes to the formulation of a more adaptive curriculum and the creation of dialogical learning spaces that position learners as active seekers of truth. The study's main contribution lies in clarifying the boundary between revelation and interpretation and proposing falsification as an epistemological instrument to strengthen traditions of critique and renewal in Islamic education. As a theoretical inquiry, this study requires further empirical testing in educational practice. Future research may explore the implementation of falsification in instructional design and educational evaluation, as well as comparative studies with classical Islamic epistemologies such as *bayani*, *burhani*, and *irfani*. Interdisciplinary approaches linking falsification with ijtihad methodology and contemporary Islamic educational reform are also recommended for further development.

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