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Integrating Reason, Logic, and Islamic Epistemology for Holistic Science in Modern Education

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Abstract: This study examines the role of reasoning, logic, and sources of knowledge in the development of modern science, focusing on how these concepts are understood and applied by students from both general and Islamic educational backgrounds. The research aims to explore the relationship between critical reasoning, logical processes, and knowledge sources in learning and daily life. Using a qualitative phenomenological design, data were collected through semi-structured interviews and analyzed thematically. The findings reveal that students employ both inductive and deductive reasoning to solve academic and everyday problems, with logic serving as a tool for constructing coherent conclusions. Knowledge sources include empirical experience, rational thinking, and guidance from religious teachings. The study concludes that reasoning, logic, and knowledge sources are interrelated and play a crucial role in shaping holistic science. Importantly, these insights highlight practical implications for contemporary education, suggesting that the integration of rational, empirical, and spiritual perspectives can inform curriculum design and pedagogy to foster deeper understanding, critical thinking, and character formation among student.
Keywords: Reasoning; Logic; Knowledge Sources; Modern Education

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INTRODUCTION

In recent years, various reports and studies have highlighted a pressing issue in education: the decline of students' critical thinking and reasoning skills, alongside the weak integration of scientific knowledge with ethical and spiritual values. For example, surveys on learning outcomes in Indonesia show that students often rely heavily on rote memorization and mechanical problem-solving rather than applying logical reasoning and contextual understanding. Similarly, Islamic education is frequently criticized for being overly ritualistic and less connected to real-life issues, which reduces its transformative role in character building and social responsibility. This gap demonstrates the urgency of rethinking how reasoning, logic, and Islamic epistemology can be meaningfully integrated into modern education.

Modern science itself has historically developed through diverse epistemological approaches, including reasoning, logic, and sources of knowledge. Reasoning, both inductive and deductive, is central to critical thinking in processing and validating new information (Hanzlová & Kudrnáč, 2024; O'Reilly et al., 2022; Sudarmaji, 2021). Logic, as a systematic tool, ensures coherent and valid conclusions, and in the Islamic tradition, *mantiq* harmonizes rational thinking with ethical-religious principles (Harahap & Pally Taran, 2023; Sari, 2023). Meanwhile, knowledge sources extend beyond empiricism and rationalism; in Islam, revelation and intuition enrich the epistemological framework, ensuring that science integrates spiritual and moral dimensions (Aziz, 2022; Refinal et al., 2024; Vera & Hambali, 2021). This view is supported by Habibi (2022), who emphasizes that truth in science must not only correspond with facts but also generate collective benefit for society.

Although the literature underscores the ideal of integrating rational, empirical, and spiritual dimensions, most studies remain theoretical and rarely examine how students actually apply these principles in their learning and daily lives. Few works address the challenge of balancing secular science with Islamic sources of knowledge in the classroom, leaving a research gap between conceptual frameworks and practical implementation. This study seeks to fill that gap by exploring the integration of reasoning, logic, and Islamic epistemology in shaping holistic science education. The novelty of this research lies in its attempt to construct an interdisciplinary framework that unites inductive/deductive reasoning, logical analysis, and spiritual knowledge, thereby offering a more balanced paradigm for science and education in the contemporary era.

Therefore, the objective of this study is to conduct an in-depth analysis of how reasoning (both inductive and deductive), logical frameworks, and Islamic sources of knowledge including revelation, intuition, and spiritual experience can be systematically integrated to support the development of holistic science in the context of modern education. Specifically, this study seeks to identify the ways in which these epistemological dimensions can complement one another in curriculum design, classroom pedagogy, and students' problem-solving processes, thereby fostering not only cognitive competence and critical thinking but also nurturing moral responsibility, ethical awareness, and spiritual

grounding. By doing so, this research aims to contribute to the construction of an educational paradigm that is more responsive to contemporary global challenges, such as moral decline, social fragmentation, and the need for sustainable human development.

In line with these objectives, this study addresses the following research questions: 1. How can inductive and deductive reasoning be effectively integrated with Islamic epistemological principles in modern education? 2. In what ways can logical frameworks and *mantiq* support the balance between scientific inquiry and spiritual-moral values in the classroom? 3. What pedagogical models and curriculum strategies can foster holistic science education that strengthens both cognitive competence and ethical-spiritual awareness?

RESEARCH METHODS

This research uses a qualitative approach with a phenomenological design, aiming to explore students' understanding of reasoning, logic, and sources of knowledge in the development of modern science. Data were collected through semi-structured interviews with students from general education and madrasah backgrounds to capture how these concepts are applied in daily life and learning processes. The data were analyzed using thematic analysis through several steps: transcribing and familiarizing with the data, generating initial codes, grouping them into broader categories, refining themes through constant comparison, and finally defining and interpreting themes to construct a holistic understanding. To ensure validity, triangulation was carried out by comparing interview results with relevant literature and classroom observations, member checking was conducted by asking participants to confirm the accuracy of interpretations, peer debriefing with academic colleagues was employed to minimize bias, and an audit trail was maintained to enhance dependability and transparency of the research process.

This study uses a qualitative method with a literature study design to examine the concepts of reasoning, logic, and sources of knowledge in modern science. The qualitative method was chosen because it is suitable for exploring theoretical and conceptual phenomena, and allows for an in-depth understanding of the role of various theories in the development of science (Creswell & Creswell, 2023). Literature studies are used to examine academic works, journal articles, and references from relevant religious texts to understand the relationship between reasoning and logic as the basis of methodology in science. Secondary data searches were conducted from indexed journals such as Philosophy of Science, Epistemology and Philosophy of Science, as well as various recent articles that discuss contemporary perspectives on epistemological and logical concepts in philosophy of science (Ariyanti Rahayu et al., 2023; Dean et al., 2016; Sulastriyani, 2023)

Data collection through literature studies involves steps to identify, select, and review academic literature, which are then analyzed using content analysis techniques. The data that has been collected is organized into main themes, such as inductive reasoning, deductive, truth criteria, and the role of logic in the

philosophy of science, which is then coded to find patterns and relationships between concepts. This content analysis serves to categorize data systematically, so that each concept can be understood in the context of modern science. Furthermore, source triangulation is carried out to ensure the validity of the data by verifying information from diverse literature, both from a secular and religious perspective. By adopting this triangulation technique, the research seeks to maintain objectivity and maintain a consistent and in-depth interpretation, so that the results of the research can be accounted for academically (Dean et al., 2016; Fathudin et al., 2024; Susanto et al., 2023).

RESEARCH RESULTS AND DISCUSSION

Research Findings

Table 1. Interview Results of 5 Students with Public School Background (A) and 5 Students with Madrasah Background (B) Coding

NO	QUESTION/ RESPONDENTS	GROUP A CODING	GROUP B CODING	RESEARCH RESULTS
1	How do you understand the concept of reasoning?	The power of thinking, arguing, describing, explaining, developing	Abstract thinking, the power of the mind, distinguishing between good and bad, describing themes, given by God to those who learn	God-given ability to process the power of the mind to solve problems
2	What components do you know about reasoning?	How to think, explain, behave, analyze and synthesize	The power of faith, knowledge, charity, and reason to solve problems	An important component of reasoning is faith, reason, attitude and deeds that are important for a person to have in solving problems
3	How to implement the concept of reasoning in the lecture process	During the exam, for tasks, service, research, organizing	Solving problems, digging for the truth, thinking about nature, usefulness	Reasoning can be used as a tool in improving learning outcomes both cognitively, affective and psychomotor

4	How do you understand logic?	The easiest way, Techniques in life, common sense, effective way of thinking, reasonable/logical	Strategy, reason, systematic, extensive knowledge, strength from Allah	Logic is a person's strategic ability including reason and way of thinking in solving problems
5	What components do you know about the logic	Orderly, structured, systematic, strategic	Mantiq, order and rule, structured, strategy, critical thinking	Important components in logic include strategy and critical thinking skills
6	How to implement the concept of logic in the lecture process	Organizing, completing tasks, learning effectively, career, logical things	Intellect in making conclusions, tasks, organizing, networking, broadening horizons	Practicing logical, systematic and easy to understand thinking in various things
7	How do you understand the source of science?	Books, internet, teachers, lecturers, parents, teachers reciting	The Qur'an, hadith, books, books, the internet and teachers	The source of knowledge includes everything that makes a person increase their knowledge both visually and audiologically and is understood in depth
8	What are some of the sources of knowledge that you know?	Five senses, intellect, scientific knowledge, non-scientific knowledge, general skills, special skills	The Five Senses, intellect, natural knowledge, social knowledge, religious knowledge, life skills	An important part of the source of knowledge is Sense, intellect, scientific and non-scientific knowledge and life skills

9	How do you utilize knowledge sources in lectures?	Gain value, provision for the future, trusted, easy to work, knowledge	obligations, useful living provisions, easy to work, to be smart	Knowledge resources are used to facilitate life and achieve desired goals
10	How do you think reasoning, logic and the source of science are interrelated?	Reasoning, the new logic of knowledge	Knowledge, Reasoning, logic	These three are 3 pillars that encourage life changes for humans to improve their culture and civilization

Source: Results of research interviews

Table 2. Interview Resume, Thursday, November 7, 2024

NO	QUESTION/ RESPONDENTS	GROUP A	GROUP B
1	How do you understand the concept of reasoning?	Statement of conclusions on a problem the power of thinking, arguing, the ability to describe the problem, the ability to explain and develop a concept 10.10	An abstract way of thinking about a concept, the power of reason, the ability to distinguish between good and bad, the ability to describe themes, the ability that God gives to those who learn 10.13
2	What components do you know about reasoning?	How to think, how to explain, how to behave, how to analyze and how to synthesize 10.15	The power of faith, the power of knowledge, the ability to do charity, and the use of reason to solve problems 10.39
3	How to implement the concept of reasoning in the lecture process	To solve exam questions, to complete tasks, to do service, to conduct research and organize 10.21	To solve problems, to dig up religious truths, to think about the universe, to use it for useful things 10.20
4	How do you understand logic?	Intelligent ways to find the easiest way, Techniques in life, common sense, effective way of thinking, something	Strategy in solving problems, an important part of reason, something systematic, comes from vast knowledge, the

		reasonable/logical 10.28	power given by God10.28
5	What components do you know about the logic	Order, structured, systematic, strategic, way of thinking 10.36	Mantiq, sequence and rules, structured, strategy, critical thinking 10.33
6	How to implement the concept of logic in the lecture process	In organizing, completing tasks, how to learn effectively, career development, finding logical things 10.33	Derived from reason in making conclusions, completing tasks, organizing, networking, to broaden horizons 10.40
7	How do you understand the source of science?	Something that can provide knowledge such as: Books, internet, teachers, lecturers, parents, teachers reciting 10.41	Something that can provide knowledge: the Qur'an, hadith, books, books, the internet and teachers 10.46
8	What are some of the sources of knowledge that you know?	Five Senses, intellect, scientific knowledge, non-scientific knowledge, general skills, special skills 10. 47	Five senses, intellect, natural knowledge, social knowledge, religious knowledge, life skills 10.52
9	How do you utilize knowledge sources in lectures?	To gain value, prepare for the future, to be trusted, easy to find a job, expand knowledge 10.54	To fulfill obligations, prepare for the future, so that life is useful, easy to work, so that you are smart 10.58
10	How do you think reasoning, logic and the source of science are interrelated?	These three things support each other. Reasoning is the foundation of strong logical abilities to acquire new knowledge 11.01	The source of knowledge is the basis of the learning foothold, to strengthen reasoning in order to have high logic in solving life problems 11.04

Source: Results of research interviews

The Concept of Reasoning in Modern Science

Inductive Reasoning: The inductive reasoning method is a way of thinking that draws general conclusions from observations of specific things. Qualitative results show that inductive reasoning is often used in empirical research where individual observational data are accumulated to formulate a broader theory. In education, inductive reasoning-based learning models (such as Problem-Based Learning) have been shown to improve students' analytical skills, facilitating

them in connecting specific concepts towards a broader and more comprehensive understanding. Deductive Reasoning: Deductive reasoning draws specific conclusions from a general premise that has been accepted as true. The results show that deductive reasoning is relevant in the context of exact science and formal logic, where deductive reasoning allows the preparation of valid arguments based on syllogism. The use of deductive reasoning enriches the decision-making process in scientific research, helping to ensure that the conclusions drawn have a strong logical basis.

The Role of Logic as a Validation Tool in Science

Logic acts as the main controller in ensuring that the thought process is carried out consistently and structured. Qualitative findings show that the application of logical principles (the principle of identity, contradiction, and rejection of third possibility) increases the accuracy and validity of the analysis. The use of logic helps in separating relevant information from what is not, thereby minimizing the risk of data misinterpretation. In the Islamic context, the science of logic or the Science of Mantiq was developed to harmonize logic with religious principles, expanding the scope of logic as a tool of thinking that is not only systematic, but also ethical.

Sources of Knowledge as Pillars of Modern Science

Empirical Knowledge: Empirical sources of knowledge or empiricism rely on sensory experience as the basis of knowledge. Qualitative results show that knowledge gained through empirical observation is the basis for scientific and technological research, especially in the natural and social sciences. These findings indicate that an empirical approach is essential to obtain objective data, which can be observed and tested directly. Rationalism: Rationalism places reason as the main source of knowledge. Research shows that rationalism contributes greatly to the development of theories based on deductive logic, such as mathematics and philosophy. Qualitative results show that the rationalist approach allows researchers to relate empirical data to theoretical concepts through deep rational analysis, supporting the creation of more consistent and cohesive theories. Revelation and Intuition in Islamic Perspective: Sources of knowledge in Islam include revelation and intuition, which provide an additional perspective in understanding knowledge as something that goes beyond sensory experience. In qualitative studies, revelation-based knowledge and intuition have been found to function as moral and spiritual guides, providing an integrative dimension to holistic science.

Criteria for Truth in Modern Science

Correspondence Theory: In correspondence theory, truth is measured based on the fit between statements and objective facts. Qualitative studies show that this theory is often applied in the natural and social sciences emphasizing empirical verification through observation and testing. Coherence Theory: Truth here is understood as internal consistency among statements in a given system. Qualitative results from various studies suggest that this theory is more

applicable in the formal sciences and mathematics, where logical consistency between propositions is considered the main indicator of truth. Pragmatism Theory: This theory assesses truth based on the practical benefits or successes of an idea in life. The findings suggest that this approach has a strong influence in the social sciences and humanities, where the practical usefulness of a theory or hypothesis is considered a measure of its validity. Consensus Theory: The truth according to this theory is the result of collective agreement within the scientific community. Qualitative results show that scientific consensus is often the basis for paradigm shifts in various disciplines, supporting the understanding that scientific truth is dynamic and influenced by social acceptance. Truth in Religion: In the religious view, truth is derived from divine revelation, which provides a fundamental understanding of human existence and the universe. The study finds that in Islam, religious-based truth is not only seen as a moral solution, but also an ethical guide in the development of science.

Concepts of Reasoning

Reasoning is a thought to reach a conclusion statement on a problem. reasoning is an activity of the human mind to process the knowledge we receive through the five senses and is aimed at achieving truth. This is not limited to evidence because it is not always based on formal logic. This reasoning ability is very important in achieving good learning outcomes. Improving reasoning skills in the learning process is used to achieve success (Khambali et al., 2021; Rismen et al., 2020). In addition, reasoning can also be defined as the activity, activity, or thought process in drawing a new statement based on several statements that are considered true (Agusantia & Juandi, 2022; Ananda et al., 2023; Clemente-Suárez et al., 2023).

Reasoning ability training can be done through the learning model carried out. Using the right learning model will improve reasoning skills (Khaeroh et al., 2020). In drawing conclusions, reasoning is divided into two, namely inductive reasoning and deductive reasoning (Ishak, 2023). Inductive Reasoning: Inductively from various statements with a limited scope, more general conclusions are drawn. This conclusion can be used in statements that are increasingly fundamental. Deductive Reasoning: An activity that turns away from inductive. Deductive is a way of thinking to draw specific conclusions from statements that are general. This deductive conclusion is widely used in the syllogism mindset where it is composed of two statements and a conclusion.

Logic Concept

Logic is a way of thinking to draw a conclusion to get a reasonable answer. A person can think logically according to appropriate rules based on classification, structure, and have acumen in using his logic (Aini et al., 2024; Al-Ghifary et al., 2022; Arifiya, 2023; Busroli, 2019; Kurniyawati & Prastowo, 2021). The reasoning process is very important in the ability of logic. Because, logic is the science of thinking and reasoning correctly (Oktaviana & Haryadi, 2020; Pulungan, 2024). Among the verses of the Qur'an that encourage people to think

is Surah Al Alaq: 1-5, QS. Al Ankabut: 20, QS. Al Hajj: 46, QS. Al-A'raf: 185, and other verses concerning thinking (Mu'izzuddin, 2016).

In Islam, the science of logic is known as the Science of Mantiq. Mantiq science is a science that discusses how to think correctly, well, and systematically by using reason that is in accordance with the rules in Science. The word Mantiq comes from the Arabic word "Nathoqo" which means to think. While in Greek, it comes from the word "Logic" which means the statement of a word or thinking (Harahap & Pally Taran, 2023; Munib & Atnawi, 2020; Syarif, 2016). The truth of logic is very important for science. The science of logic is based on several principles in thinking, namely: The Principle of Identity (principium of identity). The Principle of Contradiction (principium contradictionis), and the Principle of the Third Possibility Rejection (principium exclusi tertii). These three principles are a scientific structure that is rational. This will help individuals to think rightly, precisely, efficiently and systematically to gain validity and set aside mistakes (Achadah & Fadil, 2020).

Knowledge Sources

A source of knowledge is an individual tool to obtain information about a thing or object. Humans have two main sources of knowledge, namely the senses and intellect. Because the senses and intellect are the source of human beings to obtain information (Octaviana & Ramadhani, 2021). Source of Sensory Science (Empiricalism): Knowledge obtained with the five senses with the establishment that knowledge comes from experience. Through the senses, it will produce impressions and ideas. Source of Knowledge (Rationalism): An assertion that the source of knowledge lies in reason. The intellect needs the help of the five senses to obtain data, but only the intellect can connect all the data that has been obtained and formed into knowledge. In Islam, the Qur'an is a source of knowledge that covers all aspects of life. The Qur'an is a revelation from Allah SWT that functions as the beginning and end of knowledge that is "directed" by revelation, so it is impossible to discuss Islamic education without mentioning its source. The Qur'an and science have universal meanings. The Qur'an forms guidelines or rules that come from Allah SWT, while science is the study of real nature based on human experiments and perceptions or the way to approach God's truth (Adhiguna & Bramastia, 2021; Dianita & Novita Piqriani, 2023; Haryanti, 2024; T. M. dkk Nasir, 2022). These two things can be integrated so that they become a complete unit. Because Islam has its own point of view in interpreting science (Miftakhurosyad, 2020). According to Islam, the sources of knowledge are specifically divided into six, namely sensory experience, reason, revelation, intuition, authority, and belief (Fahmi et al., 2024; Sudrajat & Sufiyana, 2023; Vera & Hambali, 2021). Islamic education must be able to produce scientists who think creatively, authentically and originally, not by remembering or repeating but by thinking (Desfita et al., 2024; Hapidin et al., 2022; Yulita et al., 2025).

Criteria for the Truth of Modern Science

Modern science is influenced by positivism which has been caused by many things and needs to be studied for its truth (Dybicz & Hall, 2021; Park et al., 2020; Waruwu & Widodo, 2022). Etymologically, the word *al-haq* (truth) means something that is obligatory and must be determined, and reason will not be able to deny its existence. This is found in the word of God:

۞ اِنَّ اللّٰهَ لَا يَسْتَحْيٖٓ اَنْ يَّضْرِبَ مَثَلًا مَّا بَعُوْضَةً فَمَا فَوْقَهَا ۗ فَاَمَّا الَّذِيْنَ اٰمَنُوْا فَيَعْلَمُوْنَ اَنَّهُ الْحَقُّ مِنْ رَّبِّهِمْ ۚ وَاَمَّا الَّذِيْنَ كَفَرُوْا فَيَقُوْلُوْنَ مَاذَآ اَرَادَ اللّٰهُ بِهٰذَا مَثَلًا ۘ يُضِلُّ بِهٖ كَثِيْرًا وَّيَهْدِيْ بِهٖ كَثِيْرًا ۗ وَمَا يُضِلُّ بِهٖٓ اِلَّا الْفٰسِقِيْنَ ۝٢٦ (البقرة/2: 26-26)

Meaning: Indeed, Allah does not hesitate to make the parable of a mosquito or something smaller than that.9) As for the believers, they know that it is the truth of their Lord. However, the disbelievers said: "What does Allah mean by this parable?" With that (parable) many people were misled.10) With that he also gave many people guidance. However, no one was misled by it, except the wicked,11). (Q.S Al-Baqarah: 26).

9) Small creatures that are thought to be weak, such as mosquitoes, ants, bees, spiders, or others, actually have a lot of wisdom to be a lesson for humans.10) A person becomes misguided because of his disobedience and does not want to understand the instructions of Allah SWT. In this verse it is explained that they are in denial and do not want to understand why Allah SWT uses mosquitoes as a parable. As a result, they become misguided. 11) An unrighteous person is a person who violates the provisions of religion, both by speech and deeds (Al-Qur'an, 2019).

Scientific truth is a noun that can carry something abstract or concrete (Hayati, 2021; Jylkkä & Railo, 2019; Yao et al., 2022). In Arabic, it is called "Al-Haq" which means truth. A truth can be interpreted as the conformity between a statement and an event that can be proven through senses, intuition, reason, knowledge, and belief. Some of the criteria or theories of truth are (Amelia et al., 2023): Correspondence Theory of Truth: A truth lies in objective facts or any phenomenon that can be captured by the five senses such as sound waves, taste, texture, and visuals. Coherence Theory of Truth: Truth occurs when a new statement conforms to a pre-existing statement and is already known to be true. The Pragmatic Theory of Truth: The capture of the meaning of an idea is limited by scientific, personal or social references. A truth depends on the usefulness of human life. The Performance Theory of Truth: truth is understood not as an attribute of a statement, but as the result of a particular action (performance). The Consensus Theory of Truth: Science will develop and have the characteristics of changing the old paradigm changed by the new paradigm. This change is determined by the attitude of the general public in accepting a paradigm and conception of scientific truth. Religion as a Theory of Truth: Religion is a solution for humans in seeking true truth. Answers and truths will appear in a religion like the universe, about humans or gods. An event is considered true if it is in accordance with revelation and religion. Each truth has its own rules and criteria, both individuals and groups of knowledge. The truth of one theory and another

cannot be compared because they are not the same (Evers et al., 2024; Setiawan, 2024; Sihite, 2023).

Based on the various sources of knowledge that have been mentioned, the truth of a knowledge is classified into three. First, what is clear is the authenticity, there is no doubt or question about its source or meaning and intent. Second, which has been proven to be authentic and true but the meaning and intention contained has not been or cannot be ascertained. For example, the hadith of the Prophet Muhammad Saw which has many interpretations because there are many metaphors found in it. Third, not only the authenticity and correctness of the source are still in question, but also its meaning is still debated. Included in this category is all knowledge that comes from humans, intellect and the five senses (Irawati et al., 2021; Junaedi et al., 2024; Kusuma et al., 2023; T. M. Nasir et al., 2024).

To enhance clarity, the presentation of findings could be further supported by a small infographic or simplified table that summarizes the main differences between students from public schools and madrasah backgrounds, making the coding patterns more accessible for readers. Compared to previous studies that often discussed reasoning, logic, and sources of knowledge only in a conceptual manner (e.g., Khambali et al., 2021; Khaeroh et al., 2020), this research underscores its novelty by providing empirical evidence from student interviews and highlighting the integrative role of Islamic epistemology alongside modern scientific reasoning. This comparative insight strengthens the contribution of the study, not only reaffirming existing theoretical discussions but also offering fresh perspectives on how reasoning, logic, and sources of knowledge can be systematically applied in educational practice.

Table 3. Comparison of Previous Studies and This Research

Aspect	Previous Studies (2020–2023)	This Research (2024)
Focus of Study	Conceptual discussion on reasoning, logic, and epistemology in general (Khambali et al., 2021; Khaeroh et al., 2020).	Empirical exploration of students' understanding of reasoning, logic, and sources of knowledge in daily learning.
Methodology	Mostly literature review and theoretical analysis.	Qualitative phenomenology with semi-structured interviews and thematic coding.
Integration of Islamic Epistemology	Limited to textual interpretation of *mantiq* and revelation-based knowledge.	Combines reasoning (inductive/deductive), logic, and Islamic epistemology (revelation, intuition) within actual student practices.
Findings	Highlighted the importance of	Shows concrete student perspectives: reasoning linked to

	reasoning and logic for education, but abstract in application.	faith and deeds, logic linked to systematic strategies, and knowledge sources blending empirical and religious dimensions.
Novelty	Theoretical contribution without field-based validation.	Empirical validation with coding patterns, triangulation, and practical implications for curriculum and pedagogy.

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CONCLUSION

Reasoning Reasoning, logic, and sources of knowledge play a pivotal role in shaping the development of modern science. Based on the findings, reasoning is identified as the ability to think critically through inductive and deductive approaches, applied not only in academic contexts but also in everyday life such as understanding nature, seeking truth, and enhancing learning outcomes. Logic is recognized as a systematic framework for constructing valid arguments and making effective decisions, helping individuals think strategically, accomplish tasks, and grasp concepts more comprehensively. Meanwhile, sources of knowledge include empirical references such as books and sensory experiences, rational insights such as reason and intuition, and, in the Islamic tradition, revelation and faith as fundamental guides to understanding the essence of life. These three elements are closely interconnected, forming a strong foundation for science that is relevant, systematic, and responsive to the demands of the times.

Looking forward, future studies may expand this exploration by incorporating larger and more diverse student populations, examining how reasoning, logic, and Islamic epistemology can be operationalized in digital learning environments, and testing interdisciplinary models that connect science, ethics, and spirituality. From a policy perspective, the results highlight the importance of integrating these epistemological elements into curriculum design, teacher training, and assessment systems. Policymakers and educators are encouraged to create learning frameworks that foster critical reasoning while nurturing ethical and spiritual awareness, thereby contributing to the formation of a holistic educational paradigm that prepares students for global challenges and sustainable human development.

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