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Integration of Science and Thematic Qur'anic Exegesis in Strengthening Contemporary Islamic Understanding

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ABSTRACT

This study aims to develop an integrative model between modern science and thematic Qur'anic exegesis to strengthen contemporary Islamic understanding, particularly in reading the *ayat kauniyah* (verses of natural phenomena). A qualitative approach with an exploratory–interpretative design was employed, as it is suitable for examining textual meanings, expert perspectives, and epistemological dynamics that cannot be reduced to numerical measurement. The choice of design is grounded in the need to deeply investigate the relationship between classical exegetical methodology and the development of modern scientific knowledge. The research was conducted at UIN Sunan Kalijaga Yogyakarta, known as a center for the integration of Islamic sciences. Five informants were purposively selected based on their expertise in Qur'anic exegesis, Islamic philosophy, and science, enabling a comprehensive understanding of the topic. The findings reveal a methodological gap in linking thematic exegesis with scientific inquiry and highlight the need for an integrative hermeneutical framework that combines Islamic epistemology, dialogical approaches, and thematic methods. Recommendations include developing science-based exegesis curricula, enhancing interdisciplinary collaboration, and formulating methodological guidelines applicable to contemporary Qur'anic studies.

INTRODUCTION)

The development of modern scientific knowledge has brought new dynamics to the ways Muslims understand religious texts, particularly the *ayat kauniyah*, which are often related to natural phenomena, the structure of the cosmos, and the laws of creation. Amid the rapid advancement of contemporary science, there emerges an urgent need to present a model of Qur'anic interpretation capable of engaging critically and constructively with the latest scientific findings. The epistemological tension between the legacy of classical exegesis and the framework of modern science often creates an interpretive gap that affects the Muslim community's understanding of the integration between Islam and science. This situation demonstrates that although the thematic interpretation (*tafsir mawḍū'ī*) approach has contributed significantly to Qur'anic studies, it still requires methodological strengthening that enables interdisciplinary knowledge interconnections. Therefore, this study discusses how the integration of science and thematic exegesis can offer a new paradigm for understanding contemporary religious issues more comprehensively and relevantly(Yang et al., 2024).

In contemporary scholarship, studies on the integration of Islam and science have developed through various approaches, ranging from Islamic epistemology and the Islamization of knowledge to discourses on Qur'anic science. However, most of these studies focus more on philosophical dimensions and have yet to address, operationally, how interpretive methodologies can directly synergize with empirical scientific approaches. Meanwhile, thematic exegesis has advanced rapidly by mapping Qur'anic verses based on specific themes, but this approach often stops at linguistic, historical, and classical literature elaboration without expanding the analysis to empirical phenomena relevant to modern scientific developments. Hence, there is a need to update the *state of the art* in tafsir research

by methodologically and conceptually integrating the textual and scientific domains of knowledge(Mao & Lei, 2023).

The core problem raised in this study stems from the interpretive gap regarding *ayat kauniyah*, which are frequently understood only partially or used merely as illustrations without methodological reinforcement. On one hand, some contemporary exegetes attempt to incorporate scientific data into textual analysis but often fall into apologetic tendencies or *matching theory*, which diminishes scientific critical accuracy. On the other hand, some modern scientists tend to position the Qur'an as a static text, irrelevant to recent scientific discoveries. This epistemic and methodological gap presents a major challenge in formulating an adaptive Islamic understanding that responds to the changes of time without neglecting the methodological integrity of Qur'anic exegesis(Molodkina, 2022).

Based on this mapping, a significant research gap becomes apparent: the absence of an integrative hermeneutical model that systematically connects classical interpretive methodologies rich in philological traditions, historical contexts, and authoritative transmission with the analytical framework of modern science, which emphasizes empirical verification and scientific rationality. Previous research has generally addressed the integration of Islam and science at a philosophical level or merely cited scientific findings as supplementary arguments. This indicates that studies concerning the relationship between thematic exegesis and scientific knowledge require a new approach one that is not merely complementary but capable of establishing an equal epistemological dialogue between the sacred text and empirical phenomena(Lee, 2025).

The main novelty of this study lies in formulating an integrative hermeneutical model that aims to connect the tradition of classical exegesis with contemporary scientific discoveries through in-depth thematic analysis. This model does not simply merge two fields of knowledge, but instead provides a methodological framework that facilitates a proportional dialogue between the textual meanings of the Qur'an and the dynamics of modern science. The basic principles of this model include: mapping Qur'anic *kauniyah* concepts, examining classical exegetical literature, analyzing relevant scientific findings, and constructing a hermeneutical synthesis that bridges these two dimensions without negating either. Thus, this study contributes directly to the development of contemporary tafsir methodology capable of addressing global scholarly challenges(Arminjon, 2022).

From these conceptual formulations, several research questions arise: (1) How can the thematic exegesis approach be enriched through the integration of modern science? (2) What issues emerge due to interpretive gaps in understanding *ayat kauniyah* within the context of scientific development? (3) To what extent can the integrative hermeneutical model offer methodological solutions for renewing contemporary tafsir studies? and (4) What is the relevance of this integrative approach in enhancing modern Islamic literacy, particularly in the context of education and curriculum development in tafsir studies?

Based on these questions, the objectives of this study are to explain and analyze in depth how the thematic exegesis method can be strengthened through the integration of modern science, identify interpretive gaps in understanding *ayat kauniyah*, and formulate an integrative hermeneutical model that can serve as a methodological reference in contemporary tafsir studies. This study also aims to assess the relevance of the integrative approach in strengthening modern Islamic literacy, particularly in higher education and the development of science-based tafsir curricula(Supena, 2024).

The benefits of this study can be viewed from three aspects. Theoretically, it enriches the corpus of tafsir studies by presenting an interdisciplinary paradigm that links Islamic epistemology with modern scientific methodology. This theoretical contribution is essential for advancing a tafsir discourse that is not solely oriented toward classical traditions but also capable of offering new perspectives relevant to contemporary developments. Academically, this study provides a hermeneutical model that can serve as the foundation for developing science-based tafsir curricula aligned with the demands of modern Islamic higher education to produce graduates with balanced Islamic and scientific literacy. Practically, this research offers an applicative framework for educators, researchers, and policymakers in designing learning programs, training, or Islamic educational policies that are responsive to the dynamics of modern scientific knowledge(Haney, 2025).

This study employs a qualitative approach using textual analysis and in-depth interviews with tafsir experts. Textual analysis is conducted on *ayat kauniyah*, classical and contemporary exegetical literature, and relevant scientific studies related to natural phenomena and modern cosmology. Interviews with tafsir experts provide authoritative perspectives that enrich hermeneutical analysis and ensure that the resulting knowledge synthesis has a strong academic basis. Through this approach, the study is able to explore the epistemological and methodological dimensions needed to develop an integrative tafsir model(Schweiker, 2022).

The limitations of this research lie primarily in its scope, which focuses on selected themes of *ayat kauniyah* and does not encompass all dimensions of the integration between Islam and science comprehensively. In addition, interview data are limited to specific tafsir experts and thus may not fully represent the diversity of perspectives across related disciplines. Nevertheless, these limitations do not diminish the academic value of the study; instead, they open avenues for further research to explore other dimensions of science–tafsir integration in a broader and more in-depth manner(Wagemakers, 2025).

RESEARCH METHODS

This study employs a qualitative approach with an exploratory interpretative design aimed at deeply examining a model of integrating science and thematic Qur'anic exegesis to strengthen contemporary Islamic understanding. The qualitative approach was chosen because this research focuses on meaning analysis, text interpretation, and conceptual construction elements that cannot be reduced to numerical data or quantitative measurement. This approach enables the researcher to understand the thought patterns, academic experiences, and perspectives of tafsir experts regarding the potential integration of science within Qur'anic interpretive methodology. Thus, the exploratory interpretative design serves to map a relatively new phenomenon in Qur'anic studies: the integrative hermeneutics between classical exegesis and contemporary scientific discoveries. This design is also relevant for addressing research problems that are conceptual, methodological, and applicative, as it provides the researcher with the flexibility to conduct an in-depth interpretation of qualitative data.

The selection of this design is supported by several strong methodological considerations. First, the integration of science and Qur'anic exegesis is an interdisciplinary topic that requires methodological flexibility; therefore, a qualitative approach is considered most appropriate to capture the dynamics of discourse, argument construction, and evolving epistemic frameworks among Muslim scholars. Second, the exploratory design allows the researcher to identify new patterns, themes, and frameworks that have not been recognized in previous studies. Third, the interpretative design provides space for the researcher to interpret textual meanings and empirical data comprehensively, enabling the development of an integrative hermeneutical model as the novelty of this study. Thus, the research design not only aligns with the nature of the data but also supports the development of theories and conceptual models that constitute the primary objectives of this research.

This study was conducted at the State Islamic University (UIN) Sunan Kalijaga Yogyakarta, selected as the research site because the institution has a rapidly developing center for Qur'anic and scientific studies and serves as one of the main references for integrative scientific research in Indonesia. Additionally, UIN Sunan Kalijaga is known for its consistent promotion of interdisciplinary approaches through the paradigm of "Integration–Interconnection," pioneered by leading scholars in Islamic studies. These factors make the university an ideal environment for exploring academic perspectives on the integration of tafsir and science. The presence of faculties of Sharī'ah, Ushūluddīn, and Qur'an–science research centers provides a rich and relevant data source for this study. The selection of this location also considers the researcher's accessibility to informants with academic competence in tafsir and Islamic scientific thought.

The research involved five primary informants, all selected purposively based on their academic competence, research experience, and involvement in teaching or studying tafsir and science. To maintain research ethics and protect informant confidentiality, pseudonyms are used for all participants. The first informant, Dr. "Hasan Nawawi," is a lecturer in *Ushūluddīn* and an expert in classical exegesis, selected for his profound understanding of traditional tafsir methodologies. The second informant, Prof. "Mahfud Ridwan," is a professor of Islamic philosophy and knowledge

integration, chosen for his contributions to developing integrative paradigms. The third informant, Dr. "Siti Marwah," is a researcher in contemporary Qur'anic studies, selected due to her involvement in projects that combine textual studies and scientific phenomena. The fourth informant, Dr. "Adnan Faiz," is an expert in physics and Islamic cosmology, providing scientific perspectives related to *ayat kauniyah*. The fifth informant, "Laila Hapsari, M.A.," is a lecturer in thematic Qur'anic exegesis, selected for her experience in designing thematic tafsir curricula and their contemporary relevance. The use of purposive sampling ensures that the data obtained truly comes from competent experts relevant to the research focus.

The data collection techniques in this study consist of three primary methods: document analysis, in-depth interviews, and non-participatory observation. Document analysis was conducted on classical exegesis works, contemporary tafsir literature, journal articles related to the integration of Islam and science, and tafsir curriculum documents used in Islamic higher education. Document analysis provides theoretical and historical foundations for understanding the development of integrative thought. In-depth interviews were conducted to explore informants' perspectives on the interpretation of *ayat kauniyah*, models of integrating science in tafsir, and their assessment of methodological gaps in previous research. The interviews were conducted face-to-face and online, recorded with participant consent, and analyzed thematically. Non-participatory observation was conducted on academic activities such as seminars, lectures, and internal faculty discussions related to the theme of knowledge integration.

Data analysis employed thematic analysis developed by Braun & Clarke, modified to align with the integrative hermeneutical approach. The analysis process involved six stages: repeated reading of data to understand context, generating initial codes, grouping codes into major themes, reviewing themes to ensure alignment with research objectives, defining themes conceptually, and synthesizing the results. At this stage, the researcher also applied hermeneutical analysis by integrating textual meanings from classical tafsir sources with empirical data from interviews and scientific findings. Comparative analysis was conducted to examine how informants' perspectives align or differ from existing literature, resulting in a conceptual synthesis that supports the development of the integrative hermeneutical model.

To ensure data validity, this study employed source triangulation, method triangulation, and theory triangulation. Source triangulation was conducted by comparing data from the five different informants; method triangulation was carried out by combining document analysis, interviews, and observations; and theory triangulation was achieved by comparing the perspectives of al-Attas, Gadamer, and Fazlur Rahman to validate the interpretation. This process ensures that the research findings possess high levels of credibility and dependability according to international academic standards.

The conclusion-drawing technique followed a repeated verification process in line with qualitative data analysis procedures. Conclusions were not drawn instantaneously but developed through reflection, pattern building, and the integration of analytical results with theoretical and empirical data. Verification was conducted by examining the consistency between data, analysis, and theoretical interpretation. The researcher also conducted member checking by providing informants with summaries of interview findings to ensure that interpretations aligned with their original perspectives. The final conclusions were formulated as key findings and an integrative hermeneutical model explaining the relationship between thematic exegesis and modern science. Conclusion drawing was carried out deductively from theory and literature, and inductively from empirical data.

This research method was selected in consideration of the complexity of the topic and the need to generate significant theoretical contributions. The qualitative approach enables holistic exploration of informants' experiences and perspectives, while the exploratory–interpretative design supports the development of a new conceptual model capable of addressing gaps in previous research. By employing a relevant research site, competent informants, comprehensive data collection techniques, and systematic data analysis, this study ensures academic quality aligned with the standards of reputable national and international journals.

RESULTS AND DISCUSSION

The study on the integration of science and thematic Qur'anic exegesis in strengthening contemporary Islamic understanding reveals several important findings closely related to the epistemological, methodological, and practical dynamics of Qur'anic scholarship. The research departs from the central problem of interpretive gaps concerning *ayat kauniyah* when confronted with the rapid development of modern scientific knowledge. Although this issue has been identified in numerous previous studies, there has yet to be a systematic approach capable of presenting a comprehensive integrative model between classical exegesis and contemporary science. The findings of this study expand the methodological horizon of tafsir by introducing an integrative hermeneutical model that enables the Qur'an to be read in a multidimensional manner, in accordance with the needs of the Muslim community in the modern era.

The findings indicate that the majority of informants consisting of Qur'anic exegetes, Islamic philosophers, and scientists agree that one of the fundamental roots of the problem in understanding *ayat kauniyah* lies in the minimal epistemological interaction between Islamic intellectual traditions and empirical science. Informants observed that the relationship between the two domains tends to operate independently, lacking the methodological dialogue needed to enrich the understanding of both revelation and natural phenomena in a balanced manner. Classical tafsir, despite its philological and historical depth, was generally not designed to address modern scientific questions that evolve rapidly. Meanwhile, modern science develops within a framework of empirical rationality that does not necessarily consider values, ethics, or spirituality, which constitute the core of Islamic epistemology(Ross, 2022). This lack of synergy creates an epistemic gap that hinders a comprehensive interpretation of *ayat kauniyah*, even though these verses explicitly invite humans to reflect on nature as signs of God's greatness.

On the other hand, the responses of some contemporary exegetes to scientific developments often fall into apologetic tendencies. This apologetic approach leads to *scientific matching*, a strategy of aligning certain verses with popular scientific theories. Such an approach stems from the desire to affirm the superiority of the Qur'an by "proving" it with scientific data. However, as expressed by informants in this study, the apologetic approach introduces serious issues. First, scientific theories are dynamic and always subject to revision, refinement, or even refutation based on new evidence. If exegesis depends on unstable theories, the interpretation of verses will shift every time scientific revisions occur. Second, this matching approach reduces science from an analytical tool to a tool of justification, undermining the academic critical attitude that should serve as the foundation of tafsir studies. Third, apologetic reasoning tends to reduce the meaning of verses by forcing revelation to follow scientific theories, without considering the breadth of their spiritual, ethical, and theological meanings.

Table 1 Integration of Science and Thematic Qur'anic Exegesis in Contemporary Islamic Understanding

Key Aspect	Research Findings	Discussion Analysis	Implications for Qur'anic Studies and Education
Epistemological Gap	Classical tafsir and modern science often operate independently with minimal dialogue.	The lack of epistemological interaction creates an interpretive gap in understanding *ayat kauniyah*, limiting holistic comprehension of revelation and nature.	Qur'anic studies require an epistemological framework that positions science and revelation as complementary sources of knowledge.
Apologetic Tendencies	Some contemporary interpretations rely on matching Qur'anic	Scientific matching is methodologically fragile because scientific theories are provisional and subject to	Tafsir should avoid apologetic justification and instead adopt critical,

Key Aspect	Research Findings	Discussion Analysis	Implications for Qur'anic Studies and Education
	verses with scientific theories.	change, risking interpretive instability.	dialogical engagement with science.
Role of Islamic Epistemology	Revelation is emphasized as a source of values and meaning rather than scientific prediction.	The Qur'an provides moral, metaphysical, and ethical orientation, while science offers empirical explanations of natural phenomena.	Scientific data should function as contextual support, not as an absolute interpretive authority in tafsir.
Integrative Hermeneutical Model	An integrative model combining Islamic epistemology, modern hermeneutics, and thematic exegesis is formulated.	This model enables proportional dialogue between text, context, and empirical reality without subordinating one domain to another.	The model can serve as a methodological reference for contemporary tafsir research and curriculum development.
Understanding of *Ayat Kauniyah*	*Ayat kauniyah* are repositioned as ethical and epistemological guides.	These verses invite reflection on cosmic order, balance, and divine wisdom rather than technical scientific explanation.	Qur'anic interpretation becomes more value-oriented, fostering ecological ethics and spiritual awareness.
Interdisciplinary Collaboration	Limited collaboration exists between exegetes and scientists.	The absence of interdisciplinary dialogue contributes to partial and fragmented interpretations.	Strong collaboration between Qur'anic scholars and scientists is essential for comprehensive tafsir development.
Impact on Islamic Literacy	Integrative tafsir enhances critical and contextual Islamic understanding.	Students and scholars gain the ability to relate Qur'anic teachings to contemporary scientific and social realities.	Integrative approaches strengthen modern Islamic literacy and relevance in higher education.

summarizes the core findings and discussion of the study regarding the integration of modern science and thematic Qur'anic exegesis. The table demonstrates that the primary challenge lies in the epistemological and methodological gap between classical tafsir traditions and contemporary scientific knowledge. The proposed integrative hermeneutical model addresses this gap by facilitating a balanced dialogue between revelation, historical context, and empirical science. As a result, *ayat kauniyah* are interpreted not as scientific predictions but as ethical and epistemological foundations for understanding nature. This approach strengthens contemporary Islamic understanding, enhances Islamic literacy, and provides a practical framework for developing science-based tafsir curricula in higher education.

These findings are consistent with critiques raised by several contemporary Islamic scholars. Thinkers such as Seyyed Hossein Nasr, Fazlur Rahman, and Osman Bakar have argued that the integration of Islam and science should not be pursued by proving the truth of revelation through scientific theories; instead, revelation must be positioned as a moral and value-based framework guiding the use and understanding of science(Supena, 2022). They emphasize that Islamic epistemology fundamentally differs from the epistemology of modern science, and thus the relationship between the two should not be built on competition. Islamic epistemology is holistic, acknowledging metaphysical and transcendent dimensions as integral components of knowledge, whereas modern science operates at the empirical and phenomenal level(Albayrak & Gözeler, 2024). Thus, integration is possible only when the two domains are positioned as complementary rather than substitutive or mutually exclusive.

The informants also highlighted that one of the major obstacles to achieving genuine integration is the lack of interdisciplinary dialogue between exegetes and scientists. Exegetes are typically well-versed in linguistics, history, and theology but often lack technical expertise in physics, biology, geology, or astronomy. Conversely, scientists may have limited understanding of Islamic epistemology or tafsir methodology. This disconnect results in partial interpretations of *ayat kauniyah*. The study finds that effective integration can only occur through interdisciplinary collaboration, whereby each discipline contributes according to its strengths. In this context, science provides empirical descriptions of natural phenomena, while tafsir offers meaning, moral purpose, and spiritual depth that science alone cannot provide.

Furthermore, the study reveals that Qur'anic interpretation should not and cannot be positioned as a competitor to science. Viewing the Qur'an as a rival to science creates a false dichotomy that confuses the public and generates unnecessary epistemological tensions. The Qur'an is a book of divine guidance, not a manual of physics or biology. Its interpretation must therefore be conducted within a framework of values, moral vision, and spiritual orientation that transcend empirical facts. When science is positioned as an epistemic partner rather than an adversary, the relationship becomes harmonious and mutually enriching. This viewpoint was emphasized repeatedly by the informants, who stated that *ayat kauniyah* encourage humans to use reason and scientific knowledge to understand the order of the cosmos as a manifestation of divine majesty.

The findings reinforce the idea that the integration of Islam and science must be built on Islamic epistemology that places revelation at the center of value. This epistemology does not reject science; rather, it situates science within a broader ethical and meaningful framework. Thus, integration does not entail artificially "Islamizing" science but viewing scientific knowledge as part of a holistic spiritual and intellectual reflection. When science is read in the light of revelation, and revelation is understood in the context of empirical phenomena, a unified understanding of both physical and metaphysical reality emerges.

The study also demonstrates that the integrative hermeneutical approach is a strategic solution to the epistemological tension that has long persisted. This approach allows the Qur'anic text to be understood through three dimensions: first, textual meaning as analyzed through classical tafsir tradition; second, contextual meaning related to socio-historical dynamics; and third, empirical meaning that can be connected to modern scientific findings. By combining these dimensions, interpretation is no longer trapped in the outdated dichotomy between religion and science; instead, it presents a multidimensional, critical, and relevant reading for present and future generations of Muslims.

Overall, the findings affirm that the future of tafsir cannot be separated from constructive dialogue with science. Healthy interaction between the two strengthens the interpretive reach of the Qur'an while addressing the challenges of modernity. Science offers factual descriptions of nature, and the Qur'an provides meaning, purpose, and ethical orientation. When the two are brought into dialogue through an integrative hermeneutical approach, the understanding of *ayat kauniyah* becomes richer, deeper, and more aligned with contemporary realities.

Document analysis findings show that previous research tended to focus either on the discourse of Islamization of knowledge or on citing scientific findings merely as supporting evidence for tafsir arguments. For example, some studies attempt to interpret verses on human creation through modern embryology or cosmological verses through the Big Bang theory. Although these studies contribute to Muslim understanding, they exhibit methodological gaps because they do not prioritize balanced epistemological dialogue between the Qur'an and science. In contrast, this study asserts that integrating tafsir and science must be pursued through a hermeneutical model that accounts for textual dynamics, historical context, and modern scientific findings that are progressive rather than final.

The study also finds that the research gap arises from the underdevelopment of a tafsir methodology explicitly linking Islamic epistemological principles with scientific methodology. Interviews reveal that informants recognize the urgent need for an interpretive model that is not only thematic but also integrative. Informant "Mahfud Ridwan," for example, explains that one of the weaknesses of contemporary tafsir studies is the lack of a methodological bridge enabling equal

dialogue between sacred texts and human empirical experience. This aligns with previous research, which indicates that integration between Islam and science can only be achieved when both stand on proportional epistemological grounds. This study reinforces that view and fills the research gap by constructing an integrative hermeneutical model grounded in al-Attas' knowledge integration theory, Gadamer's hermeneutics, and Fazlur Rahman's thematic exegesis.

With regard to the research problem, the findings show that the integration of science and thematic tafsir is not only feasible but also highly relevant to the development of contemporary Islamic studies. The research problem, centered on how thematic tafsir can be enriched through the integration of science, is answered through findings that show thematic tafsir offers a systematic analytical framework for mapping *kauniyah* concepts and relating them to scientific phenomena. The findings demonstrate that modern exegetes may use scientific data as contextual support rather than as an absolute measure of truth. This aligns with previous research suggesting that the thematic approach is one of the most adaptive interpretive methods for addressing socio-scientific dynamics.

Another finding related to the research objectives shows that the integrative hermeneutical model developed in this study effectively strengthens modern Islamic literacy. The model is not merely an academic theory but also applicable in designing Qur'anic exegesis curricula in Islamic universities. Informant "Laila Hapsari," an experienced curriculum designer, states that the integrative approach can be used to educate students to understand the Qur'an critically, systematically, and contextually. This statement aligns with findings from various international universities showing that integrating scientific perspectives into Islamic studies enhances learning quality, particularly in Islamic philosophy, Qur'anic cosmology, and scientific ethics. This underscores the significant educational impact of the research.

Furthermore, the integrative hermeneutical model proves effective in strengthening Islamic literacy, especially in Qur'anic interpretive methodologies faced with contemporary scientific developments. The model functions not only as a theoretical formulation but also as a practical framework that can be directly applied in education, particularly in designing science-based tafsir curricula in Islamic higher education. This demonstrates that the research extends beyond conceptual development and contributes tangibly to academic practice by enhancing students' critical, analytical, and interdisciplinary competencies.

Informant "Laila Hapsari" explains that the integrative approach has great potential for systematic implementation in the learning process. She notes that students often understand Qur'anic interpretation fragmentarily because they rely solely on classical textual methods without considering contemporary scientific developments. Yet today's students live in an era of rapid scientific and technological advancement, requiring learning models that connect tafsir with contemporary realities. The integrative hermeneutical approach identified in this study provides more relevant and adaptive analytical tools for students to interpret *ayat kauniyah* and social verses comprehensively.

She further emphasizes that the integrative approach bridges the gap between classical tafsir tradition and modern academic demands. In her view, tafsir methodology must not remain confined to rigid classical approaches; instead, it must evolve toward reflective, critical, and contextual forms of understanding. Students should not only comprehend textual meanings found in classical commentaries but also discern their relevance to contemporary scientific developments such as technology, bioethics, astronomy, ecology, and other scientific issues. Through such integration, students develop broader perspectives on the Qur'an while articulating Islamic values within global academic discourse.

This perspective aligns with research from various international institutions such as the International Islamic University Malaysia (IIUM), the Oxford Centre for Islamic Studies (OCIS), and Islamic Studies programs in Europe and the United States which shows that integrating science into Islamic studies enhances learning quality in fields such as Islamic philosophy, Qur'anic cosmology, natural theology, and scientific ethics. These interdisciplinary approaches enrich students' understanding of the relationship between revelation and empirical phenomena. In other words, scientific integration not only broadens intellectual horizons but also deepens appreciation for the Qur'an as a multidimensional source of knowledge.

International literature further notes that integrating science into Islamic studies enhances students' intellectual capacity to formulate solutions to contemporary issues through reflective and analytical approaches. These findings support the conclusion that the integrative hermeneutical model fosters a more productive academic environment. By combining textual, historical, and scientific analyses, students do not view the Qur'an merely as a sacred text but as an intellectual source inspiring scientific and civilizational development. This highlights the influence of tafsir–science integration on cultivating students' critical thinking regarding the relationship between revelation, reason, and empirical reality.

The study also finds that the integrative hermeneutical model significantly contributes to designing a more comprehensive science-based tafsir curriculum. Qur'anic exegesis curricula, which have traditionally focused on classical literature, can be updated by incorporating scientific elements, modern hermeneutical methodologies, and multidisciplinary thematic analysis. This strengthens students' capacity to understand *ayat kauniyah* more contextually, especially regarding global issues such as climate change, environmental crises, digital technological advancements, and medical developments. Thus, integrative tafsir curricula not only enrich academic material but also enhance the relevance of learning for global societal needs.

This research also highlights that the integrative hermeneutical approach helps cultivate Muslim scholars who balance textual understanding with scientific insight. It instills the awareness that religion and science are not opposing entities, but two sources of knowledge that can reinforce one another. In higher education, this approach has the potential to produce graduates capable of mediating dialogue between religion and science in professional, academic, and social settings. This aligns with the broader objectives of Islamic education: to produce intellectuals who are critical, innovative, and grounded in spiritual values derived from the Qur'an.

Moreover, the study affirms that the integrative hermeneutical model offers great potential as a new paradigm in tafsir studies. While various universities worldwide have begun developing new approaches that combine classical methods with modern scientific perspectives, this research contributes more explicitly by systematically formulating how tafsir–science integration can be implemented in academic contexts. The model can thus serve as a reference for curriculum designers, tafsir lecturers, researchers, and Islamic educational institutions in creating learning approaches more adaptive to contemporary developments.

Ultimately, the findings reinforce the argument that this research has significant implications for Islamic education. The integrative hermeneutical model provides not only an academic solution to methodological gaps in tafsir studies but also a new direction for developing contemporary and critical Islamic literacy. In an era when Muslims must respond intellectually to global challenges, the integrative approach proposed in this study is highly relevant and strategic for implementation across various educational levels.

Interview analysis shows that informants agree on the need to reposition *ayat kauniyah* as ethical and epistemological foundations for understanding natural phenomena, rather than as scientific predictions or hidden codes to be matched with specific theories. This perspective emerges in response to apologetic tendencies among some groups who attempt to prove the Qur'an's truth by directly matching verses with scientific findings. Although popular in public discourse, informants argue that such an approach is methodologically flawed and risks weakening the Qur'an's standing when scientific theories change or evolve. Thus, positioning *ayat kauniyah* as sources of values, cosmological principles, and ethical foundations is considered more appropriate and aligned with the primary purpose of revelation.

Informant "Adnan Faiz," with a background in physics and Islamic cosmology, emphasizes that modern science is inherently progressive and dynamic. He explains that every scientific theory, no matter how established, remains open to re-evaluation, falsification, and revision based on new empirical evidence. Therefore, science cannot serve as a permanent tool for proving the Qur'an's truth. In this context, he stresses that treating *ayat kauniyah* as scientific predictions or "physics codes" is a form of reductionism that diverges from the Qur'an's nature as a book of guidance. Scientific theories

may change, while the Qur'an possesses enduring truth independent of any particular scientific paradigm. This epistemological view forms the basis for the argument that tafsir–science integration must take place within a dialogical not apologetic framework.

Other informants with backgrounds in tafsir and Islamic philosophy support this view. They argue that *ayat kauniyah* are not intended as modern scientific explanations but as invitations to contemplate the orderliness of creation as a manifestation of divine wisdom and power. Values such as order, balance, harmony, and cosmic justice are central concepts that repeatedly appear in these verses. These values, they argue, should serve as methodological foundations for reading natural phenomena, ensuring that the integration of science and tafsir does not lead to literal matching but to deeper reflection on the moral and ontological structure of creation.

This view aligns with prior research indicating that the relationship between the Qur'an and science lies not at the level of textual alignment between verses and theories but at the philosophical level of cosmic order. These studies assert that the Qur'an does not detail the technicalities of physics, chemistry, or biology, but rather invites humans to observe the order of nature as signs of God (āyātullāh). This cosmic order becomes the meeting point between revelation and science. Both view the universe as a system governed by laws, and scientific inquiry represents humanity's effort to understand these laws. Thus, integrating tafsir and science is best understood as integrating values and meaning structures not theories.

Informant "Adnan Faiz" further adds that interpreting *ayat kauniyah* should not be forced to conform to specific theories, given that every scientific theory has methodological limitations. He cites the Big Bang model as an example: although dominant in cosmology, it still leaves unresolved questions regarding the origin of primordial energy, the quantum structure of spacetime, and pre-singularity concepts. If Qur'anic verses are forced to match this theory, any revision to the theory will render the interpretation obsolete. This demonstrates that apologetic approaches are not only scientifically fragile but also risk diminishing the spiritual depth of Qur'anic meanings.

Tafsir scholars in this study assert that understanding *ayat kauniyah* must align with the Qur'an's purpose: guiding humans to comprehend the essence of creation and their role as stewards on earth. Interpretation of natural phenomena should therefore aim to strengthen spiritual awareness, ecological ethics, and moral responsibility not merely confirm alignment with physics or astronomy theories. They emphasize that when the Qur'an discusses the heavens, earth, or cosmic phenomena, its primary focus is moral and metaphysical, not technical scientific elaboration.

Contemporary studies on Qur'an and science similarly argue that literalist scientific matching limits the expansive meaning of Qur'anic verses. For instance, the concept of the "seven heavens" is often reduced to atmospheric layers, even though classical tafsir offers far richer metaphysical and cosmological interpretations. A purely scientific approach risks erasing this symbolic and spiritual richness.

The integrative hermeneutical model introduced in this study bridges these views by positioning science as an epistemic partner in understanding nature while preserving the authority of revelation. Science is used not to prove the Qur'an but to broaden interpretive horizons. With this approach, *ayat kauniyah* are not narrowly interpreted as scientific predictions but as part of a value structure encouraging critical, rational, and spiritual contemplation of the universe.

This integration allows for multidimensional interpretation: textual meaning is preserved, historical context is considered, and scientific meaning serves as an additional interpretive layer that enriches understanding. This approach encourages Muslims to be more active in scientific development while grounding their scientific engagement in Qur'anic ethical values. For informants, science framed by religious values produces a holistic understanding that avoids positivistic reduction.

Thus, interview results reinforce the conclusion that repositioning *ayat kauniyah* as ethical and epistemological guides is essential for building Islamic understanding that adapts to modern scientific advancements. These verses are not intended as scientific predictions but as guides for understanding cosmic order and affirming divine greatness. This finding underlies the development of the integrative

tafsir model, which views dialogue between revelation and science as an active, dynamic, and evolving process in line with the progressive nature of science and the profound depth of Qur'anic meaning.

With regard to theoretical contributions, the findings enrich Qur'anic studies by offering a new approach that bridges classical and modern scientific traditions. The study demonstrates that integrative hermeneutics can directly contribute to contemporary tafsir theory. While earlier research identified the need for epistemological renewal in tafsir to address modernity, this study advances such efforts by developing a concrete and applicable conceptual model. This theoretical benefit is crucial as it provides an academic foundation for further research in the field of Islam–science integration.

Practically, the findings offer methodological guidelines for educators, researchers, and policymakers in designing science-based tafsir curricula. The study shows that scientific integration not only broadens students' horizons but also enhances their analytical abilities in understanding sacred texts critically. Earlier studies from various Islamic universities support this finding, showing that integrative approaches significantly improve students' understanding of *ayat kauniyah*. Therefore, the practical benefit of this study is clear: it provides a foundation for developing curricula that are more relevant, responsive, and innovative.

Academically, the study contributes significantly to tafsir methodology by introducing the integrative hermeneutical model. Previous research highlighted the need for Qur'anic interpretation that does not rely solely on textual analysis but also considers scientific and social dynamics. This study strengthens that argument with consistent empirical and theoretical findings that demonstrate how scientific integration can reinforce modern Islamic literacy. This expands academic horizons and opens opportunities for further research at regional and international scales.

In its broader discussion, the study emphasizes that the integrative hermeneutical model is not merely a theoretical concept but an urgent scholarly need in contemporary Islam. Amid the global flow of knowledge, Muslims face the challenge of interpreting religious texts in an environment increasingly shaped by scientific and technological findings. Without adequate interpretive methodologies, religious understanding risks falling behind and losing relevance. While previous studies acknowledged the importance of contextual relevance in interpreting the Qur'an, this study provides a more concrete contribution by formulating an integrative model that unites text, context, and science.

CONCLUSION

This study concludes that the integration of science and thematic Qur'anic exegesis is a highly relevant and urgent approach for strengthening contemporary Islamic understanding, particularly in the interpretation of *ayat kauniyah* related to natural phenomena and the development of modern scientific knowledge. The findings indicate that the core problem lies in the epistemological gap between classical tafsir methodology primarily text-oriented and modern science, which emphasizes empirical verification. This gap is reflected in the lack of methodological dialogue between the two disciplines, both of which ultimately seek to understand reality but rely on different epistemic frameworks. Field data, expert interviews, and literature analysis reveal that this discontinuity is not caused by a substantive contradiction between the Qur'an and science, but rather by the absence of an interpretive model capable of systematically bridging these two realms.

This aligns with earlier discussions emphasizing that the integration of tafsir and science cannot be achieved through partial approaches or by merely matching verses with scientific theories. The study shows that successful integration requires a comprehensive hermeneutical framework that incorporates Islamic epistemology, the dialogical principles of modern hermeneutics, and the methodological structure of thematic exegesis. These three foundations have proven effective in accommodating scientific developments without undermining the authority or meaning structure of the Qur'an. The synergy among these theories and approaches results in an integrative hermeneutical model that stands as the study's primary novelty. This model not only explains how *ayat kauniyah* can be understood more contextually, but also demonstrates how modern scientific knowledge can serve as a valid and constructive interpretive instrument.

The study also shows that the research questions have been comprehensively answered through thematic analysis of empirical data and literature. The findings demonstrate that thematic exegesis has significant potential for incorporating scientific perspectives due to its systematic and interconnected nature. However, this potential has remained underutilized because of methodological limitations among exegetes and prior researchers. The integrative model developed in this study directly addresses this methodological gap. Through this model, the research successfully formulates interpretive steps that allow science to enter the exegetical process proportionally neither dominantly nor subordinately.

The research objective of strengthening Islamic understanding through the integration of science has also been achieved through the identification of theoretical, academic, and practical benefits discussed in previous sections. Theoretically, the study enriches contemporary Qur'anic discourse by introducing an integrative hermeneutical paradigm that may serve as a new reference for developing tafsir theories. Academically, the findings contribute to curriculum development in Islamic higher education, particularly in addressing the needs of a new academic generation that requires methodologies relevant to the scientific and technological era. Practically, the integrative model can be applied in educational and da'wah contexts to help communities understand *ayat kauniyah* through an approach that is rational, empirical, and still rooted in theological values.

The findings and discussion further demonstrate that the integration of science and tafsir is not only possible but necessary to prevent misunderstandings about the relationship between the Qur'an and scientific advancements. With the introduction of the integrative hermeneutical model, this study affirms that dialogue between revelation and science is a natural and productive interpretive process. Such dialogue allows Islamic understanding to be more adaptive to the changes of modernity without losing the normative authority of the Qur'an. This conclusion reinforces the idea that the integration of knowledge does not aim to reshape the sacred text to fit scientific theories; instead, it positions science as an epistemic partner in understanding the signs of God manifested in nature.

Overall, this study concludes that the integrative approach between science and thematic tafsir is a significant contribution to contemporary Islamic studies. It not only addresses the main problems and research gaps identified in earlier scholarship but also provides a methodological foundation that can be further developed through subsequent studies in areas such as Qur'anic cosmology, Islamic bioethics, and the philosophy of science. Thus, this research serves as an initial stepping stone for advancing a modern, science-based tafsir paradigm that is more constructive, systematic, and relevant to the needs of the global Muslim community.

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