



The Practice of Qur'anic and Tafsir Integration in Thesis Writing: Challenges and Patterns at Biology Education Department UIN Alauddin Makassar

Emir Surya Kautsar¹, Sohrah², Umni Alwiyah³, Asniati Jabbar⁴

^{1,2}Prodi Ilmu al-Qur'an dan Tafsir, Pascasarjana UIN Alauddin Makassar, Indonesia

³Prodi Pendidikan Biologi, Pascasarjana Universitas Negeri Makassar, Indonesia

⁴Faculty of Science and Technology, Postgraduate School University of Mysore, India

ABSTRACT

Integrating Islamic science and natural science is a significant challenge in Islamic higher education in Indonesia. This research aims to analyze the implementation of this integration in thesis writing and its impact on the development of Islam-based science at Alauddin State Islamic University Makassar. This qualitative study, which includes data quantification, combines field research and literature review frameworks with a case study approach. Data were collected through thesis document analysis, supported by interviews and questionnaires. Content analysis was used to evaluate the extent to which verses of the Qur'an and their interpretations are integrated with biological studies in a relevant and scientific manner. The results indicate that the majority of students' theses incorporate the Qur'an and its exegesis as a theological foundation, particularly in topics such as ecology, environmental preservation, and biodiversity. However, the implementation of this integration faces several challenges, including a lack of tafsir literature relevant to biological themes and limited student understanding of scientific interpretation methods. Despite these challenges, the integration positively impacts students by strengthening their spiritual values and fostering Islamic-based ecological awareness. The implications of this research highlight the need for developing more systematic scientific integration modules, providing training in scientific interpretation methods for lecturers and students, and strengthening collaboration between science (Biology) and interpretation. These efforts aim to produce integrated scientific works that are academically relevant and contribute to society.

ABSTRAK

Integrasi sains Islam dan sains alam merupakan salah satu tantangan utama dalam pendidikan tinggi Islam di Indonesia. Penelitian ini bertujuan untuk menganalisis bagaimana integrasi tersebut diimplementasikan dalam penulisan skripsi, dan dampaknya terhadap pengembangan sains berbasis Islam di Universitas Islam Negeri Alauddin Makassar. Penelitian ini merupakan penelitian kualitatif dengan kuantifikasi data yang menggabungkan kerangka penelitian lapangan dan kepustakaan dengan pendekatan studi kasus. Data diperoleh melalui analisis dokumen skripsi dengan ditunjang oleh hasil wawancara dan kuesioner. Penelitian ini menggunakan analisis isi untuk mengevaluasi sejauh mana ayat-ayat Al-Qur'an dan tafsirnya terintegrasi dengan kajian biologi secara relevan dan ilmiah. Hasil penelitian ini menunjukkan bahwa sebagian besar skripsi mahasiswa telah memasukkan Al-Qur'an dan tafsirnya sebagai landasan teologis, terutama dalam membahas topik-topik seperti ekologi, pelestarian lingkungan, dan keanekaragaman

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Corresponding Email: ✉ emirkautsar700@gmail.com

hayati. Namun, implementasi integrasi tersebut masih menghadapi beberapa tantangan, seperti minimnya literatur tafsir yang relevan dengan tema biologi dan terbatasnya pemahaman mahasiswa dalam metode *ta'wil* ilmi. Kendati demikian, integrasi ini berdampak positif pada penguatan nilai-nilai spiritual mahasiswa dan pembinaan kesadaran ekologi berbasis Islam. Implikasi dari penelitian ini adalah perlunya pengembangan modul integrasi keilmuan yang lebih sistematis, pelatihan metode interpretasi ilmiah bagi dosen dan mahasiswa, serta penguatan kolaborasi antara sains (Biologi) dan tafsir untuk menghasilkan karya ilmiah yang terintegrasi dan tidak hanya relevan secara akademis tetapi juga berkontribusi bagi masyarakat.

Introduction

The concept of sciences in the Qur'an is fundamentally integrative; without an integrative foundation, the specialization of sciences risks losing its transcendent dimension. Within the monotheism (*tawhid*) framework, science, philosophy, and religion are intrinsically unified and complementary, all of which are connected to truths that reflect the signs of His greatness (Darussalam et al., 2021). Several Qur'anic verses underscore the importance of pursuing integrative knowledge. The concept of *ulūl albāb*, mentioned in QS Āli 'Imrān (3:190), highlights the necessity of combining two key concepts: *ẓikr* and *fikr*. The dimension of *ẓikr* emphasizes divine consciousness, while the dimension of *fikr* represents scientific reasoning. The integration of these two dimensions is essential to produce scientific concepts of profound value (Iskandar, 2016).

Starting from the main idea derived from the Qur'an, the integration of religion and science has become a central issue that remains highly relevant today and has long been a focus of attention for many Muslim scholars. Numerous scholars have contributed to bridging the gap between religious perspectives (*ẓikr*) and scientific understanding (*fikr*). Prominent figures in this area include Fazlur Rahman, Seyyed Hossein Nasr, Ziauddin Sardar, Ismail Raji' al-Faruqi, and Sheikh Muhammad Naquib al-Attas. In Indonesia, similar efforts to conceptualize and implement scientific integration continue to be developed by scholars and academics, becoming an iconic phenomenon within higher education, particularly Islamic higher education. A.M. Saefudin, for instance, has championed the desecularization of knowledge, emphasizing the importance of eliminating secularism from the framework of science. Kuntowijoyo introduced the paradigm of "Islam as Knowledge," integrating Islamic principles into scientific understanding. Azyumardi Azra emphasizes the reintegration of *qauliyah* knowledge (revealed verses) and *kauniyah* knowledge (empirical science). Imam Suprayogo employs the concept of the "tree of knowledge" to depict a more structured framework of integration, while M. Amin Abdullah uses the metaphor of the "scientific spider web" to illustrate how knowledge can be integrated across various fields and disciplines (Ahmad et al., 2020).

The study of the integration of knowledge as an effort to combine science and religious knowledge is increasingly widespread in Indonesia (Prastowo et al., 2023), especially in higher education institutions following the enactment of the Republic of Indonesia Law Number 12 of 2012 on Higher Education. This law recognizes that religious knowledge is an integral part of the broader framework of science and technology. (Qorib & Afandi, 2024). This provides a strong legal basis for the implementation of the learning and education process in all Islamic Religious Higher Education Institutions, so that the position of Islamic Religious Higher Education is on par with general higher education institutions (Setiawan et al., 2017). Law Number 12 of 2012 significantly accelerates the process of knowledge integration, especially with the mandate to integrate knowledge in the establishment decree of each State Islamic university, further encouraging the

harmonization between science and religious knowledge more efficiently. (Amin et al, 2019).

Various existing State Islamic Universities (UIN) have sought to meet the government's expectations by formulating unique concepts of scientific integration for each institution (Hanifah, 2018). UIN Alauddin Makassar, since 2005, has been part of the first wave of institutional conversion (the process of transforming STAIN/IAIN into UIN) and has already formulated a concept of scientific integration. At that time, Azhar Arsyad, serving as Rector, introduced the term *Sel Cemara Ilmu* (*Cell of Knowledge Pine*) (Arsyad, 2011; Rais, 2017). In 2017, UIN Alauddin Makassar published the *Scientific Integration Guidelines*, introducing the concept of *Rumah Peradaban* (*House of Civilization*) (Barsihannor, 2020; Nur Aliyah Zainal, 2020). The most recent development is the concept of the *Kereta Keilmuan* (*Knowledge Train*), which builds upon and evolves the previous philosophical framework (Kurniati & Rahmiati, 2021). However, despite these efforts to formulate frameworks for knowledge integration, several aspects still require refinement and evaluation, particularly regarding their implementation (Rifai et al., 2014). The primary challenge in implementing this integration lies in the methodology—specifically, how to establish a dialogue between the messages of the Qur'an and Hadith and the subject matter content in a contextual manner. This requires moving beyond merely justifying or finding suitable verses or hadiths as supporting evidence (Hosaini & Akhyak, 2024).

However, in practice, the integration of knowledge in higher education, particularly at UIN, has yet to adequately address how to harmonize empirical-experimental methods with the spiritually nuanced textual reading methods derived from Islam (Al-Razi et al., 2024). If this issue remains unresolved, the result will not be true integration but rather a superficial quoting of verses, labeling with the Qur'an, or even selective cherry-picking. This is a significant concern in students' research works (theses), necessitating a critical approach and improvements in epistemology, ontology, and axiology (Roup et al., 2019).

Unfortunately, to this day, within the framework of UIN Alauddin Makassar, there has not been a fully established and operational guide for implementing scientific integration. Consequently, its application remains highly eclectic, relying heavily on how heads of departments or lecturers interpret and operationalize it based on their perspectives and capacities. This situation inevitably creates a domino effect, influencing the production of theses that emerge from the phenomenon of scientific integration, shaping the dominant patterns of integration employed, and impacting the socio-cultural realities surrounding this phenomenon.

The researchers' assumption is grounded in both logical and empirical-historical foundations, established through a preliminary study (mini-research) involving initial observations, semi-structured interviews, questionnaires, and document analysis. This analysis focused on university management guidelines and several academic manuscripts at both the university and department levels, particularly within the Biology Education department at UIN Alauddin Makassar. For example, a research article written by a lecturer in the Biology Education department at UINAM, titled "Developing Laboratory Guidance of Islamic Science-Integrated Plant Anatomy-Physiology," mentions that:

"Considering the vision and mission of Biology Education Department UIN Alauddin Makassar, the integration of Islamic science should be well implemented in classroom learning as well as in laboratory practice despite there was no standard of scientific integration guidelines (it was still a concept). Every learning activity, at minimum, should contain Islamic scientific integration content although it was merely quoting a theorem or hadiths suitable with the learning topic" (Ali & Arif, 2019).

The statement highlights that UIN Alauddin Makassar is still facing uncertainty in "grounding" the discourse of integration into more practical and operational realms due to the absence of a concrete and holistic guide for its operationalization. Even today, the

concept of integration is still in the process of finding its definitive form, while the need for an operational guide for scientific integration is critical, as religion and science have distinct scientific foundations. Therefore, to integrate the two, a clear methodology or set of guidelines is essential (Muslih et al., 2024). The inadequacy of this methodological framework has serious implications, as it could lead to naive or somewhat forced forms of integration in the scientific works of students required to incorporate elements of scientific integration (Amar, 2021).

Naive integration or superficial eclecticism, such as quoting verses from the Qur'an in this manner, is, of course, not justifiable from the perspective of Qur'anic and Tafsir studies. Therefore, scientific integration must be carried out based on a foundation that can be substantiated. This is crucial to avoid naive forms of integration or even "cherry-picking" in Tafsir. For example, when quoting verses from the Qur'an, Hadith, or applying scientific Tafsir as a form of knowledge integration, it cannot be done arbitrarily. We must also consider and combine two or even three paradigms simultaneously: the Tafsir paradigm, the scientific knowledge paradigm, and the knowledge integration paradigm, to find and achieve a sound and relevant integration formulation.

The phenomenon of scientific integration in the form of Quranization/Verse Attribution and tafsir cherry-picking in students' scientific works can certainly be addressed when students possess knowledge and understanding of the concepts and methodologies of scientific integration. Here, the sociocultural context of the university plays an important role in shaping students' integrative knowledge. Therefore, science education at UIN is ideally required to creatively dialogue the universal values of the Qur'an and Hadith with their context, and the methodology of religious teaching is required to open space for scientific approaches in the exploration of the Qur'an. About this, Amin Abdullah, as the initiator of the integration-interconnection paradigm, offers and proposes the approach of "scientific interpretation" (*al-ta'wil al-'ilmī*), an approach that involves a circular movement between bayānī, 'irfānī, and burhānī reasoning. (Asnawi et al., 2021). Through this approach, there is mutual control, critique, and improvement among the various proposed interpretations, resulting in a more holistic and dynamic integration product. (Abdullah, 2006).

The phenomenon of the validity or naivety of the implementation of scientific integration that occurs in higher education institutions, especially at UIN Alauddin Makassar, is closely related to the design and construction of the concept of scientific integration and its operationalization in the form of policies enacted and supervised by the university. The construction of this phenomenon can be observed by examining the shift in the university's scientific paradigm or philosophy by analyzing whether the transition aligns between theory and practice, and to what extent the power relations of university leadership influence and affect the construction of the scientific paradigm that should be adhered to and practiced by the entire academic community of the university. (Qorib & Afandi, 2024)

Based on the facts and data presented above, the author deems it important to investigate how the phenomenon of scientific integration occurs at UIN Alauddin Makassar, specifically examining the form of scientific integration in thesis production, the tendencies in the types of scientific integration used, and their implications. This phenomenon will be explored through the Biology Education Department at UIN Alauddin Makassar.

The selection of the Biology Education Study Department aims to examine how the concept of scientific integration is implemented at the department level. Additionally, the choice of this department is due to the significant potential for integrating the themes discussed in the field of biology with the Qur'an, Tafsir, and Hadith. This potential is evident in classical works by prominent scholars such as Ibn Qayyim al-Jawziyya in *Miftāhu Dāris Sa'ādah wa Mansyūru Wilāyatil 'Ilmī wal Irādah* and Abu Hamid al-Ghazali in *Al-Hikmah fī*

Makhlūqātillāh. This idea is further supported by research from Zaenab Canu (Canu et al., 2020) and Ahmad Naharuddin Ramadhan (Ramadhan et al., 2021), which highlight the potential for integrating biology and Islamic studies (Tafsir and Hadith). A similar sentiment is found in the book *Islam and Biology*, compiled by a team of lecturers from the Biology Department of UIN Alauddin Makassar, which focuses on the integration between biology and religious studies (Dirhamzah et al., 2020). Moreover, compared to other natural science disciplines such as mathematics, physics, and chemistry, biology holds a greater significance and presents broader opportunities for integration. This is evidenced by the 2022 publication of the series *Integration of the Qur'an and Science*, initiated by the LPMQ of the Research and Development Agency and Training of the Indonesian Ministry of Religious Affairs. This series, particularly the book *Learning Biology with the Qur'an*, serves as a reference for high school and vocational school biology courses and contains nine chapters of biology material integrated with Qur'anic studies (Rohmah et al., 2022).

Another supporting reason is that the lecturers in the Biology Education Department at UIN Alauddin Makassar have shown considerable attention to the significance of scientific integration, both in the learning process, research, and the development of biology textbooks. For example, Zulkarnaim is involved in a collaborative research project titled “*RQANI: A Learning Model that Integrates Science Concepts and Islamic Values in Biology Learning*” (A. M. Amin et al., 2022). Hamansah, S.Pd., M.Pd., created and implemented an integrated teaching module and wrote a research article titled “*The Effect of Implementing the STileS (Student Teacher Integrated Learning System) Module on Cell Biology on Improving Student Learning Outcomes*” (Hamansah & Hading, 2016). Additionally, Muhammad Khalifah Mustami has compiled a textbook titled “*Genetics*”, which includes the concept of inheritance in the Qur'an (Mustami, 2013), as well as “*Basic Concepts of Gene Inheritance in Humans*”, which discusses endogamous marriage from the perspective of genetics and Islam (Mustami & Muthiadin, 2021). He has also written a research article titled “*Validity, Practicality, and Effectiveness of Biology Learning Devices Integration of Islamic Spiritual Aspects*” (Mustami et al., 2017).

Additionally, in the research conducted by Biology Education students at UIN Alauddin Makassar, whether experimental research or Research and Development (R&D), the informative or performative dimensions of the Qur'an are often included in their study constructs. For example, this can be found in research articles titled “*Development of Evolutionary Biology Modules Loaded with Qur'anic Verses and Hadiths of Aqeedah*” (Syam et al., 2019), “*Development of Biology Learning Modules on the Reproductive System Material Integrated with Islamic Sciences*” (Rakhmatullah et al., 2020), “*Comparison of Learning Concentration Ability After Listening to the Qur'an: Between Murattal and Tilawah*” (Kautsar et al., 2020), and “*The Effect of Qur'an Murattal Audio on Students' Memory of Biological Latin Names*.” (Rahman et al, 2021).

Previous research related to the integration of sciences, particularly focusing on the study of scientific integration in thesis writing to evaluate its implementation, has not been extensively conducted. Notable studies include those on scientific integration in thesis writing in the Department of Economic Education at UIN Sultan Syarif Kasim Riau Pekanbaru (Lubis et al., 2022) and UIN Syarif Hidayatullah Jakarta (Saifudin, 2020). This study offers novelty in two key aspects: the contextual focus and the analytical approach. Contextually, it fills a gap in previous research, which has yet to specifically examine the practice of integrating the Qur'an and its exegesis (tafsir) in undergraduate thesis writing within the Biology Education Department at UIN Alauddin Makassar. This focus is significant, as the epistemological, pedagogical, and socio-cultural dynamics of knowledge integration at this institution carry unique characteristics and implications compared to other academic settings.

Furthermore, methodologically, the study introduces a relatively uncommon approach by employing analysis and annotation of the forms of Qur'anic and tafsir integration as reflected in students' academic works. It adopts two typological lenses: (1) a typology of scientific-religious integration, and (2) a typology of Qur'anic interpretive thought, particularly based on Sahiron Syamsuddin's classification of tafsir models.

Through this approach, the research contributes fresh insights to the discourse on knowledge integration in Islamic higher education, particularly in understanding how religious texts are operationalized within scientific academic writing.

Therefore, the purpose of this research is to examine how the application of Quranic verses, Hadith, tafsir literature, and scientific tafsir constructs are implemented in students' thesis writing. This is particularly relevant given that, since 2017, Key Performance Indicators have been enforced, one of which focuses on the integration of Islam, especially in non-religious study departments. One form of this integration, alongside curriculum implementation, is reflected in the final research produced by students.

The results of this research are expected to serve as a benchmark for effectively understanding the accuracy of the use of Quranic verses, hadiths, and scientific interpretations adopted by students, as well as mapping the trends in models, approaches, and patterns of scientific integration in the Biology Education Department at UIN Alauddin Makassar. This research is also intended as a reflection for the relevant institutions to revitalize the academic activities of scientific integration studies. This research is expected to serve as a reference for educators regarding the influence of inputs applied in lectures (socio-cultural context) on the production of student theses that incorporate scientific integration, which is the output of the courses that have been implemented.

Methods

This research is a qualitative study with data quantification, combining field research and literature review frameworks. It focuses on the integration of sciences, specifically the application of the concepts of the Qur'an and Tafsir in the theses of students from the Biology Education Department at UIN Alauddin Makassar. This research elaborates on the interdisciplinary approach between the Science of the Qur'an and Tafsir and Biology to analyze students' works holistically. The main objects of study are the theses and integrated teaching materials, with an integrative dimension analysis conducted to understand the simultaneous application of religious and scientific concepts.

To analyze the integrative dimension of the work, this research is conducted collaboratively by involving researchers from different educational backgrounds, including Islamic sciences (Quranic Studies and Tafsir) and general sciences (Biology and Biology Education). This collaboration aims to analyze the research object from both religious (Quranic Studies & Tafsir) and scientific (Biology) perspectives more objectively and holistically.

The researcher selected undergraduate theses written between 2021 and 2023 as the primary focus for sampling in this study. This period was chosen based on the development of regulations and policies related to the integration of knowledge within the internal academic environment of the university and across Islamic Higher Education Institutions (PTKI) more broadly, where such integration is considered to have reached a more systematic stage of implementation. This timeframe is particularly relevant considering that since 2017, UIN Alauddin Makassar has adopted an official guideline on the integration of knowledge, as stated in Rector's Decree No. 01.D of 2017. This guideline was established to support the implementation of the university's Tri Dharma (three pillars of higher education), including at the departmental level. Further, in 2019, the Ministry of Religious

Affairs of the Republic of Indonesia issued the Guideline for Knowledge Integration in PTKIs as a normative reference for all Islamic higher education institutions under its authority. Subsequently, in 2020, UIN Alauddin Makassar published the book "Concept and Implementation of Knowledge Integration," which further operationalized the institutional framework for integration, including its application within the Tri Dharma activities.

The 2021–2023 period is considered a relatively mature phase to examine how the concept of knowledge integration has been operationalized in students' academic work and program-level institutional documents. Based on these developments, the researcher assumes that undergraduate theses completed between 2021 and 2023 generally reflect several indicators of knowledge integration, as mandated by both national and institutional policies. This time range is thus regarded as representative for evaluating the extent to which the integration of the Qur'an and its interpretation (tafsir) with biological sciences has been internalized in the academic works of students in the Biology Education Department at UIN Alauddin Makassar.

Nonetheless, the researcher acknowledges that the discourse on knowledge integration has not developed uniformly across all time periods. In earlier years, particularly from 2004 to 2020, student theses addressing themes of integration or explicitly employing the term "knowledge integration" were sporadic and inconsistent. Accordingly, this study also employs a purposive sampling strategy to include theses from 2004 to 2020 that demonstrate significant relevance to the research topic, especially those focusing on the integration of the Qur'an and tafsir within the context of biology education.

The sample in this study encompasses two main categories: (1) total sampling of all undergraduate theses from 2021 to 2023, and (2) purposive sampling of selected relevant theses from 2004 to 2020. This dual approach enables the researcher to comprehensively capture both the historical dynamics and the evolving implementation of knowledge integration within UIN Alauddin Makassar.

The framework used by the researchers in analyzing these works consists of several steps. First, inventorying the verses of the Qur'an, hadith, and tafsir literature used in those works. Second, analyzing the accuracy of the use of Qur'anic verses, hadith, and the scientific tafsir adopted. Third, mapping the typology of integration and interpretation in those works. Finally, analyzing the trends in the typology of integration and interpretation most commonly used by students.

At the product inventory stage, to observe the integration of knowledge in thesis writing, the researcher adopts several indicators compiled by Saifudin (2020) and Barsihannor (2020), which include: 1) the presence of terms that reflect the integration of knowledge in the title, marked with code 1; 2) a description of the Islamic religious perspective (use of the Qur'an, interpretation, or hadith) related to the object discussed in the background section (Chapter I), marked with code 2; 3) a sub-discussion that examines the research object from the religious perspective in the theoretical review (Chapter II), marked with code 3; 4) the discussion or study of the research object from a religious perspective, reflected in the application of Qur'anic verses, interpretations, and hadiths, or the inclusion of Islamic values in the research results section (Chapter IV), marked with code 4; 5) integration with fields other than religion, marked with code 5; and 0 is used as a code for works that do not contain any of these elements (1, 2, 3, 4, or 5).

At the product annotation stage, the researcher employs the approaches of exegesis and phenomenological hermeneutics to analyze the accuracy of using religious literature in the thesis. This approach is used to examine how thesis writers construct their studies by selecting relevant verses from the Qur'an, tafsir literature, and hadith related to their research topics. Following this, mapping is carried out on the models, approaches, styles, and patterns of integration visible in the students' scientific works to understand the nature and direction of the typology of scientific integration trends in the Biology Education

Department at UIN Alauddin Makassar. This typology mapping is based on various theories and discourses on the classification of scientific integration models developed at state Islamic religious higher education institutions (PTKIN) (Jamal, 2017; Isgandi, 2021). Additionally, tafsir thought is mapped using Sahiron Syamsuddin's theory, which classifies tafsir thought into three streams: the quasi-objectivist traditionalist stream, the subjectivist stream, and the quasi-objectivist progressive stream (Syamsuddin, 2017). This classification is important, as integration in theses largely hinges on using verses and their interpretations.

Additionally, the researchers also analyzed the integrative elements in the curriculum structure and the Semester Learning Plan (RPS), followed by interviews with the Head of the Internal Quality Assurance Group of the department, distributing questionnaires, and tracing the educational background profiles of thesis writers to obtain supporting data. From the perspective of the sociology of knowledge, these variables are important to investigate because they play a role in understanding how the socio-cultural context in the Biology Education Study Department at UIN Alauddin Makassar contributes to shaping integrative understanding and knowledge for students, which will later be reflected in their thesis writing. The following presents the theoretical framework that illustrates the methodology in this research (figure 1).

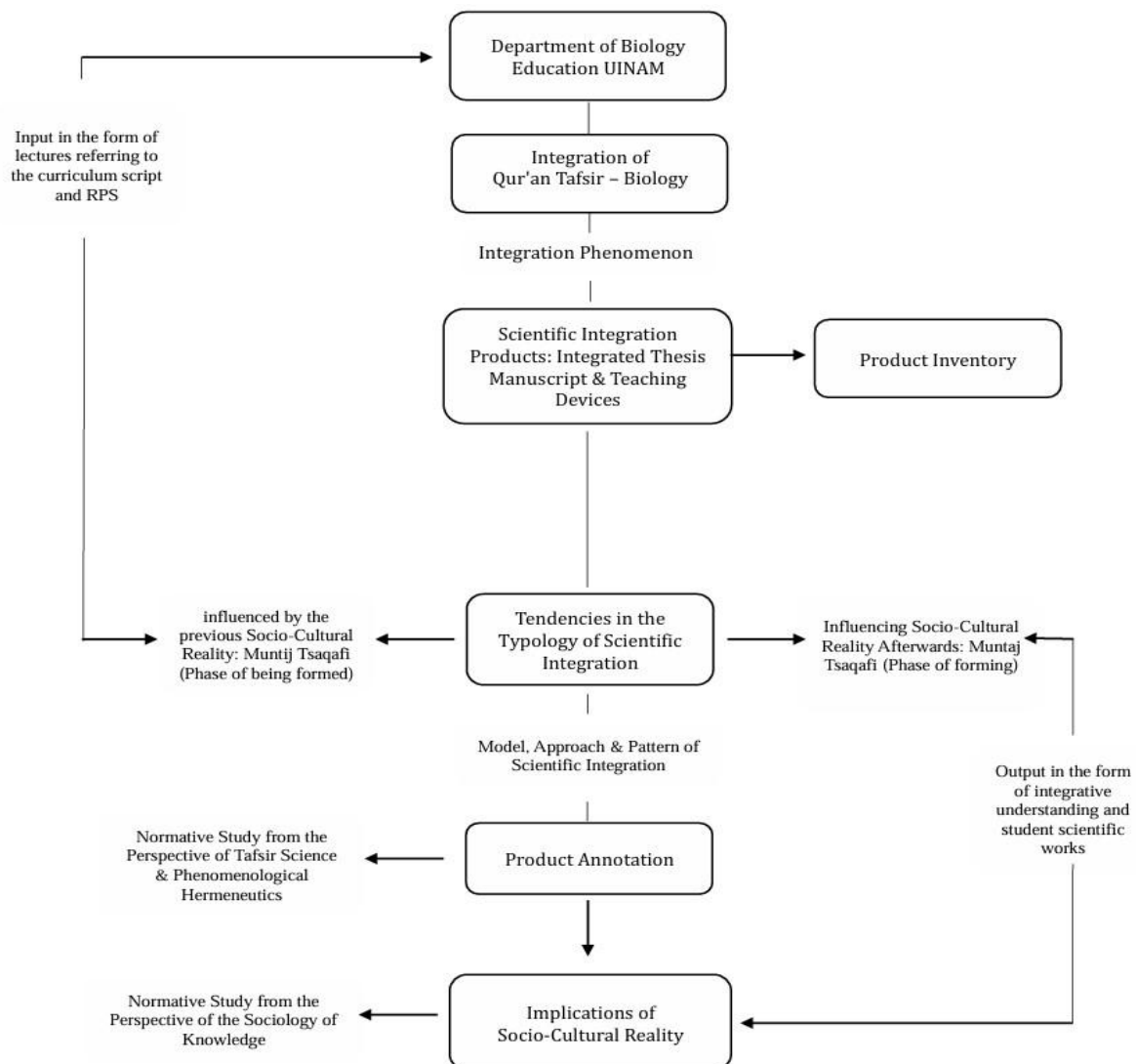


Figure 1. Research Framework

Result

Product Inventory

The researchers found that only 2 out of 185 thesis titles between 2021 and 2023 specifically explored the theme of integration, while the rest included experimental research, ex post facto, case studies, Educational Media R&D, and others, but still incorporated elements of integration in their writing systematics, as shown in the following graph:

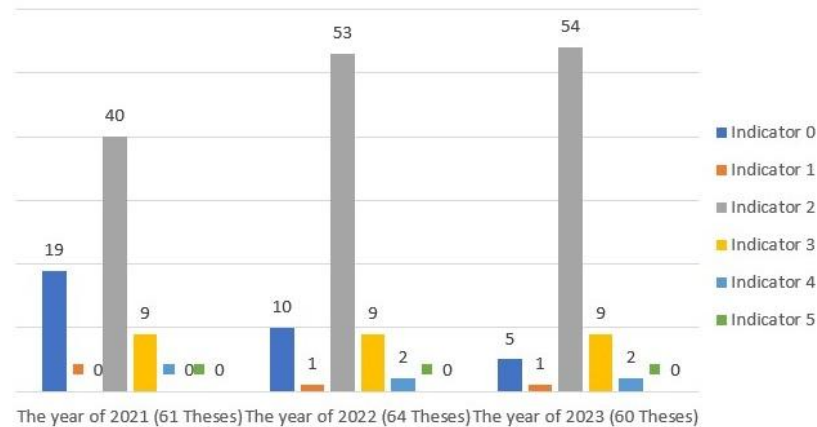


Figure 2. Illustration of Fluctuations in the Achievement of Integration Indicators
Source: Data Analysis Results

Based on the data (figure 2), it can be seen that code 0 has decreased from year to year, meaning that the number of theses that do not include integration elements at all is decreasing each year. Although there are still some each year, their number is relatively small. Conversely, other indicators tend to increase, meaning that each year more theses include integration elements in their research, even though the research themes are not specifically related to integration. Meanwhile, the number of integration indicators met in the theses, it is shown in the following diagram:

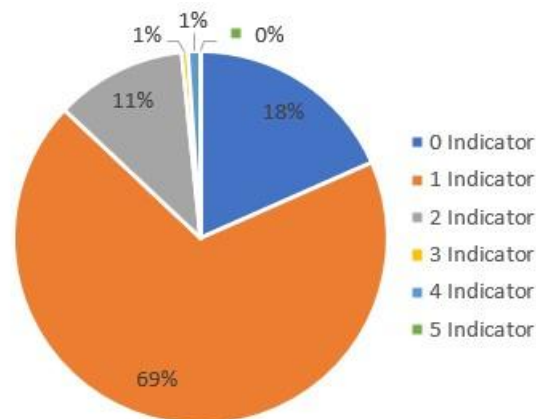


Figure 3. Overview of the Percentage of Fulfilled Integration Indicators
Source: Data Analysis Results

The data above (figure 3) shows that there are still 18% of theses that do not include integration elements at all in their thesis products. Only one indicator is most frequently met, reaching 69%. However, it should be noted that this figure tends to represent only the indicator that includes integration elements in the background section. Conversely, only 13% of the total theses meet more than one integration indicator, which tends to include integration elements in both the background and the theoretical review sections. Meanwhile, the discussion section in the thesis writing systematics is the least frequently

used point to incorporate integration elements. The use of religious literature in the thesis can be seen in the following graphs and diagrams:

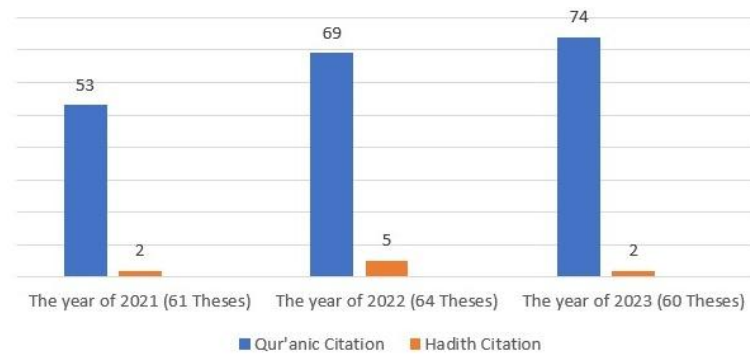


Figure 4. Comparison of the Use of al-Qur'an and al-Hadith Literature
Source: Data Analysis Results

Based on the data above (figure 4), it is evident that the use of Quranic citations is more dominant compared to Hadith citations in the thesis. The frequency of hadith citations is still far surpassed by Quran citations. This proves that hadith literature seems to be underexplored as supporting literature in the context of scientific integration. Meanwhile, the number of Quranic citations continues to increase every year. However, the use of these Quranic citations is not always accompanied by their interpretations.

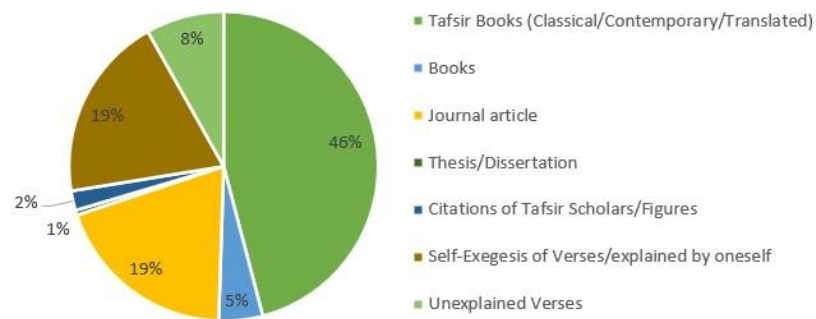


Figure 5. Overview of the Percentage of Tafsir Literature Usage
Source: Data Analysis Results

8% of Quranic verse citations are included in the theses without being interpreted or elaborated further using the *ta'wil* method. On the other hand, 19% of Quranic verse citations are interpreted by the authors themselves without referring to the opinions of *mufassir* or tafsir literature to understand their meanings and correlations with the research topic or study being discussed. In general, the literacy skills of thesis writers in accessing primary tafsir literature tend to be at a moderate to low level. This is evidenced by the fact that only 46% of Quranic verse citations are explained using primary tafsir literature, while the rest use secondary tafsir literature such as journal articles, books, theses, and others. Here is the data regarding the dominant literature of tafsir books that are cited:

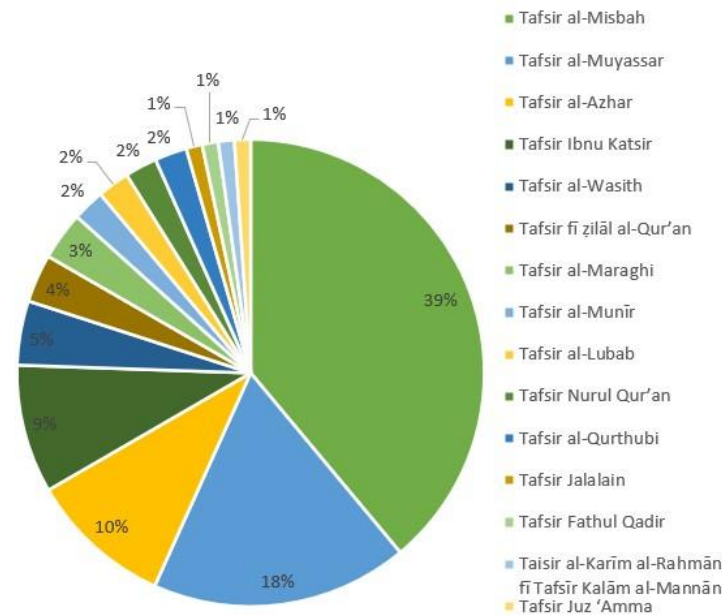


Figure 6. Overview of the Dominant Percentage of Tafsir Books Cited
Source: Data Analysis Results

The researchers found that several tafsir literature are the same and often used repeatedly in different theses, whether it is primary literature sourced directly from tafsir books or secondary literature derived from journal articles and books. This also reveals the existence of the "million thesis verse phenomenon" where certain verses, such as QS al-Mujādalah verse 11, frequently appear in various thesis research topics and are interpreted using tafsir literature that tends to be the same and less varied. The most frequently cited tafsir books, with a percentage above 5%, are the tafsir books al-Misbah, al-Muyassar, al-Azhar, and Ibn Kathir, while the others are rarely cited with a percentage below 5%.

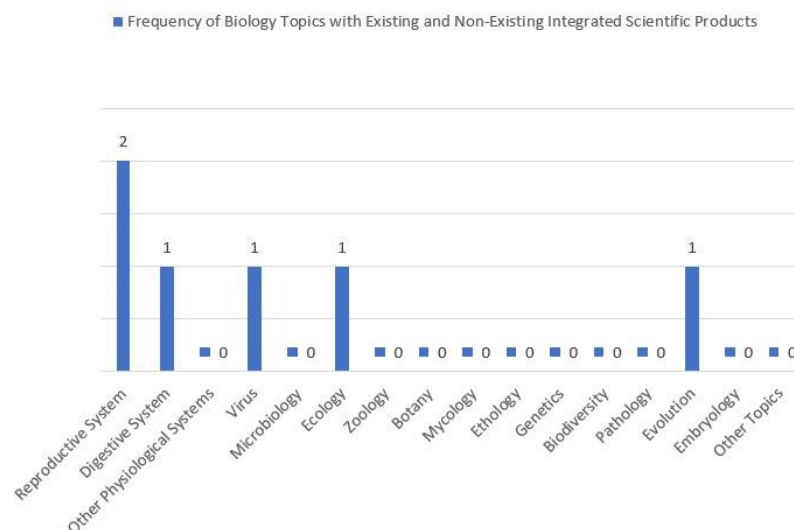
Table 1. Inventory of Integrated Islamic Science Teaching Devices

Year of Publication	No	Author	Teaching Device
2004 - 2016	-	-	None
2017	1	M. Ikhsan Syam	Evolutionary Biology Module Enriched with Qur'anic Verses and Hadiths on Creed
2018	2	Rakhmatullah	Biology Module on the Reproductive System Integrated with Islamic Science
2019	3	Mirawati	Biology Module on the Digestive System Integrated with Islamic Sciences
2020	4	Nurul Sakinah	Leaflet Teaching Material on the Reproductive System Integrated with Islamic Concepts
2021	-	-	None
2022	5	A. Muh. Farid Khuzairi	Integrated Virus Biology Module in Islamic Sciences
2023	6	Mirdawati	Biology Module on Environmental Pollution Integrated with Islamic Science

Table 2. Inventory of Integrated Islamic Science Pedagogy Methods

Year of Publication	No	Author	Pedagogical Methods
2004 - 2010	-	-	None
2011	1	Misnawati	Religious Approach in Reproductive Biology Education
2012 - 2016	-	-	None
2017	2	Salfiani	The Science, Environment, Technology, and Society (SETS) Approach Based on IMTAQ
2018	-	-	None
2019	3	Emir Surya Kautsar	Audio Murottal and Tilawah al-Qur'an Interventions on Learning Concentration
2020	4	Tri Harnisa	The KUASAI Learning Model integrated with the verses of the Qur'an
	5	Dewi Hasriani	IKRAR Model (Initiation, Construction, Reconstruction, Application, Reflection) Integrated with Quranic Verses
	6	Muslimah S. Waskita	Intervention of Qur'anic Murottal Audio on the Memory Retention of Biological Latin Names
2021 - 2023	-	-	None

Although scientific integration is included as one of the themes in the research roadmap of the Biology Education Department, this type of research remains relatively rare in thesis projects. Only 12 theses have focused on the theme of scientific integration since the establishment of the Biology Education Department, as shown in the table above. These works are distributed across two research designs: experimental research, which explores the performative dimension of the Qur'an, and R&D research, which specifically elaborates on the informative dimension of the Qur'an to be developed as supplementary teaching materials.

**Figure 7.** Distribution of Biology Topics Presented as Integrated Teaching Module Products

Source: Data Analysis Results

The data presented above (figure 7) is expected to provide guidance and considerations in selecting topics in the field of biology that have the potential to be integrated with religious literature such as the Qur'an-Tafsir in future thesis research. This is important so prospective researcher students can be more open to existing opportunities, especially for topics that have not yet been touched in the Biology Education Department of UIN Alauddin Makassar.

Discussion

Product Annotation: Between Valid and Naive Integration

To understand the form and direction of the typology of scientific integration tendencies in the Biology Education Department UIN Alauddin Makassar, it is necessary to first map the models, approaches, styles, and integration patterns evident in the student's scientific works. In practice, the researcher cannot explicitly identify the model, approach, or pattern, but can only determine the integration pattern. This is possible because the information in the thesis is insufficient to map its typology as a whole, as the thesis itself is not rich in integration nuances, making its integration typology vague, not fully present, or even nonexistent.

Table 3. Frequency Distribution of Scientific Integration Typology

Year of Publication	Typology of Scientific Integration (Integration Patterns)	Total Number of Theses	Percentage (%)
2021-2023	Informative	59	32 %
	Corrective	0	0 %
	Confirmative	77	42 %
	Similarization	0	0 %
	Parallelization	4	2 %
	Complementary	0	0 %
	Comparison	0	0 %
	Inductification	0	0 %
	Verification	11	6 %
	None	34	18 %
Total		185	100 %

Based on data analysis (table 3), it is known that the most commonly used integration typology by students in theses over the past three years (2021-2023) is the confirmative integration pattern, with 77 theses. The confirmative pattern is used by thesis writers when an argument from a certain discipline is to be affirmed or confirmed for its truth with another discipline. (Faizin, 2017). This is generally marked by the expression "as the word of God/According to the Word of God" after the argumentation structure is built at the beginning of the discussion.

In this case, the confirmation carried out by the thesis writer is mostly in the form of citation. That is, an argument regarding a certain discussion concept is confirmed or supported by the strength of the argumentation through quoting verses. This type of integration pattern requires accuracy in verse selection, and the thesis writer must pay close attention to the connection between the argumentation built at the beginning and the quoted verse.

This confirmative pattern generally does not place the verses of the Qur'an as the starting point or initial study; instead, the verses of the Qur'an are used to support the argumentation being built. Thus, the position of the Qur'an here is as an explanation, not as something that needs to be explained. The concerning aspect of integration using this pattern is when the author's argumentation does not connect or fails to be confirmed by the Qur'an due to differences in concepts or claims that are too far from the apparent meaning of the verse. In this pattern, the thesis writer's comments are usually placed before the verse, followed by quoting the verse and its interpretation. Generally, the interpretation constructed by the thesis writer by quoting the interpretation is accurate in the context of the verse but is less or not connected to the concept intended by the thesis writer at the beginning of the discussion.

The advantage of this pattern is the reinforcement of arguments in the context of religion, which seems to have similarities with Ian G. Barbour's theology of nature pattern, where religion explains science/scientific arguments. (Barbour, 1966). On the other hand, its shortcomings lie in the realm of ethics and the connection between concepts/materials, where the Qur'an has a different epistemological basis from science and not all scientific arguments can be executed neatly to be explained with religious evidence in the path of its scientific substance. Moreover, this pattern tends to stop at the level of verse-quoting, so the interpretative aspect of the cited verses is not well elaborated.

The second position is held by the informative integration pattern with 59 theses. This pattern is used by thesis writers when information from a specific discipline is enriched with information from other disciplines to provide readers with a broader perspective. (Amri et al, 2017). This pattern is not used to confirm or clarify the argumentation structure of a particular discipline like the confirmative integration pattern, but rather to present additional information to enrich the existing information. This pattern may seem similar to the confirmative integration pattern because sometimes the additional information acts as a supporter or explainer of the argumentation. However, the difference lies in the fact that this pattern provides information or explains something more generally without intending to validate the existing information. In this context, the relationship between arguments originating from general scientific disciplines and religion is not a relationship of information validation but a relationship of enriching the information, discourse, or concept being discussed. This pattern does not aim to reject or accept scientific arguments or scientific theories using verses from the Qur'an.

If the confirmative pattern seems to justify the validity of the argument using verses from the Qur'an, the informative pattern presents additional information from the perspective of the Qur'an without any tendency to justify. The advantage of this pattern is that it places the Qur'an in a neutral position in viewing knowledge and minimizes the subjectivity of the writer. On the other hand, its disadvantage is that due to its nature of being "considered" merely as an addition of information, the Qur'anic verses here are generally treated by thesis writers as mere appendages without further conceptual elaboration and sometimes appear more vague compared to the previous pattern. (konfirmasi). Floating here means that the thesis writer settles for adding verses with brief and minimal commentary or interpretation. If in the previous pattern (confirmative) high connectivity is required due to its confirmative nature, then in the informative integration pattern, this seems to be less of a concern for the thesis writer. However, in any integration pattern, the connection between materials is always key in the integration framework. Settling for just attaching verses will not provide additional information or broaden the reader's understanding if the concept between scientific arguments and the verse idea is not connected or does not reach the reader.

It is important to note here that in practice, both informative and confirmative integration patterns sometimes appear only by quoting verses without elaboration, and sometimes the thesis writers elaborate by quoting interpretations without commentary or comment without quoting interpretations. This generally applies to almost all integration patterns in the thesis samples found by the researcher, so the researcher's point in determining and placing a thesis in a certain integration pattern is not only based on the presence or absence of tafsir explanation but also on the integration method.

The third commonly used pattern is the verificative integration pattern, with a total of 11 theses. This pattern is used to reveal scientific research results that support and prove the truth of the verses of the Qur'an. (Abidin, 2021). This pattern is characterized by the belief that the Qur'an encompasses everything, including all phenomena, both scientific and social. Thus, the Qur'an, in addition to being a source of religious and social life, is also a source of science and technology. In practice, researchers found that this pattern is not only

limited to scientific research results to prove the truth of the Qur'anic verses but also sometimes a widely known concept of knowledge is claimed to originate from the Qur'an or at least the Qur'an has long been speaking about it. Similarly, the thoughts of certain figures are sometimes claimed to be sourced or inspired by the Qur'an, or even their thoughts are considered not something new because they have actually been explained in the Qur'an long ago. This verificative pattern is also somewhat similar to the confirmative integration pattern because both have a tendency to justify verses. The difference is that, in practice, the justification of verses in the verificative integration pattern is not only aimed at strengthening or confirming the truth of the argument by citing verses but also involves the belief that the Qur'an, in any context, predates scientific knowledge. What is revealed by modern science today has long been explained by the Qur'an.

However, the issue is that in the development of science, not all scientists start their research based on the verses of the Qur'an. The pattern of verifiable integration does not actually intend to justify the verses too far as explained above; initially, this pattern tended to prove the authenticity of the Qur'an by presenting scientific research results that support it. However, in practice, in the sample of thesis research, its form becomes more varied. According to the researcher, if this verificative integration pattern is executed neatly and more proportionally, it certainly holds its own value in the eyes of both science and religion.

The fourth pattern commonly used is the parallel integration pattern found in 4 theses. This pattern is employed by thesis writers when there are scientific concepts that are considered in line with concepts derived from the Qur'an due to similar connotations without equating their meanings. (Jaeni & Kusumawati, 2022). For example, in the thesis samples analyzed by the researcher, there is a thesis that links the concept of the analogy learning model with the concept of *amtsal* in the sciences of the Qur'an by citing verses of *amtsal*. There is also one that cites verses related to the role of the Qur'an as an explanation, which is compared to the role of media in learning (QS al-Nahl/16: 44). Additionally, there is a thesis that discusses Parenting Style from the Perspective of the Qur'an, which is then compared to contemporary forms of Parenting Style that exist today.

Table 4. Frequency Distribution of Tafsir Thought Typology

Year of Publication	Typology of Exegesis Thought	Total Number of Theses	Percentage (%)
2021-2023	Quasi-Objectivist Traditionalist	88	47 %
	Quasi Subjectivist	33	18 %
	Quasi-Objectivist Progressive	9	5 %
	None	55	30 %
Total		185	100 %

Next, in the context of exegesis thought, the Quasi-Objectivist Traditionalist typology is more dominant than the others. The indicators that the researcher uses for the quasi-objectivist traditionalist typology are interpretations that tend to present the original meaning of the Qur'anic verses during the time of the Prophet. (Syamsuddin, 2017). Ideally, this typology is characterized by the use of classical tafsir scientific tools such as linguistic rules, *asbab nuzul*, *munasabah*, and other scientific tools found in the sciences of the Qur'an. However, since the thesis being examined by the researcher falls into the category of non-religious theses, with a research basis not in the realm of tafsir, as long as the interpretations presented in the thesis convey the original meaning of the Qur'anic verses, even if they are less or not strongly characterized by the use of tafsir scientific tools, the researcher will classify them as a quasi-objectivist traditionalist typology.

Each tafsir book essentially has its own style and typology, but in examining the typology of tafsir in the context of this research, the researcher does not categorize it based on the reference tafsir book cited but rather on the accumulation of tafsir quotes and the argumentation structure of the thesis writer in interpreting certain verses of the Qur'an. Thus, even if the referenced tafsir book is a classical tafsir, it does not automatically or necessarily mean that its typology is a quasi-objectivist traditionalist. Similarly, even if the cited tafsir book is a contemporary tafsir, it does not necessarily mean that its typology is quasi-objectivist progressive.

The determination of typology here emphasizes the substance of the interpretation as constructed by the thesis writer, not just the type of tafsir book or other sources referenced. If the tafsir quotes or constructions present the original meaning of the verse as it was during the time of the Prophet and do not deviate significantly from the apparent meaning of the verse, then the researcher categorizes it into the quasi-objectivist traditionalist typology. The interpretation that emerges from this typology seems to be straightforward, adhering to its original meaning without forcing the verse to fit the context of the thesis writer's research. The characteristics of this typology are that it has the potential to present the original meaning of the Qur'an, uses classical interpretation methods although not intensively, has a linguistic nuance although not in the sense of dissecting the meaning of each word of the verse, and tends to be textual.

Furthermore, even though the interpretation that emerges from the student's thesis is concise (*mukhtasar*) and almost identical to the translation of the verse with only minimal commentary, as long as the interpretation tends to present the original meaning of the verse that is similar to the interpretations found in tafsir books, the researcher categorizes it into the quasi-objectivist traditionalist typology.

If viewed from the perspective of the science of exegesis, this typology is actually tested for its accuracy because the use of *ra'yu* (opinion/reasoning) in its exegesis is in a proportional portion, but its drawback lies in the connection between the context of the thesis writer's research and the presented exegesis context, which sometimes lacks relevance. In other words, if we only look at the context of the verse and its interpretation, then such an interpretation is indeed appropriate. However, if we consider a broader context, namely the context of scientific integration, then sometimes the interpretation constructed is indeed in accordance with the verse but lacks connection with the context of the thesis writer's research. It is important to note that the researcher here is not saying that the use of this typology has the potential to present a low integration value, because such a thing can actually happen with all types of interpretation typologies, depending on how accurately the selection of verses and the construction of arguments are presented neatly by the author to connect the verses with the context of the discussion in the thesis research, so that both the integration value and the interpretation value are adequate.

Then the indicators used by the researcher in the quasi-subjectivist typology are interpretations that attempt to present or produce new meanings or at least expand meanings in accordance with the tendencies and motives of the interpreter (thesis writer). Interpretations of this kind tend to construct meanings that differ from the original interpretations during the time of the Prophet. (Syamsuddin, 2017). In determining the typology of quasi-subjectivism, the researcher does not rely too heavily on the aspects of the tafsir figures cited or referenced by the thesis writer. However, the researcher here relates it more to the aspect of integration. For example, even though the dominant tafsir quotes used by the thesis writer have a quasi-objectivist traditionalist nuance, the thesis writer's thoughts expressed in their writing somewhat forcefully direct or condition the interpretation to align with the context of the thesis writer's research. Although on the surface it may seem unrelated, indirectly, the thesis writer is also seeking new meanings in accordance with the quasi-subjectivist school of thought.

In this case, the typology of subjective interpretation in the context of this research is closely related to the selection of verses, the accuracy of reasoning, and the construction of arguments by the thesis writer in connecting the discussion within the context of the thesis writer's research with the cited interpretation. The comments of the thesis writer in constructing the direction of meaning towards the interpretation they quote become an important point in this typology. The characteristics of this typology are contextual interpretation, emphasizing the thesis writer's comments on verses or tafsir quotes, and the conditioning of arguments and the direction of tafsir meaning that tend to be subjective according to the context of the thesis research. This typology can very likely appear in two forms: the subjectivity of the tafsir product quoted by the thesis writer (a subjective tafsir figure) or the subjectivity originating from the thesis writer themselves. For example, one thesis sample interprets the word "طيرا ابابيل" in QS al-Fil as a sign of the existence of Allah's creatures that are pathogenic like microbes or viruses by quoting the interpretation of Muhammad Abduh, or another thesis sample interprets the phrase "تخرج الحي من الميت و تخرج الميت من الحي" from QS Ali Imran (3): 27 as a verse that discusses the process of virus creation/reproduction.

Next, the indicator used by the researcher in the progressive quasi-objectivist typology is an interpretation that tends to present a dynamic understanding of the Qur'an. This progressive typology places great emphasis on the aspect of contextualizing meaning in the present time. Therefore, even though the researcher found thesis studies that heavily cited classical exegeses, on the other hand, they attempted to present a dynamic understanding of the Qur'anic verses, which falls into the progressive typology. In other words, this typology seeks to present the contextual meaning of verses based on contemporary conditions without neglecting the original meaning during the time of the Prophet (peace be upon him). The characteristic evident in this thought is the author's ability to contextualize the meaning of the Qur'anic verses in the current era, resulting in a dynamic output of the study. For example, one of the thesis samples that interprets a verse from QS al-An'am/6: 125:

"And whoever He wills to lead astray, He makes his chest constricted and distressed, as if he were climbing up to the sky."

The verse was interpreted by the thesis writer with a scientific approach, related to the presence of oxygen as a necessity in the human physiological process. The Quran provides a metaphor for those who stray from the path of Allah, as if their chests are constricted and narrow as if they are (climbing) to the sky. The thesis writer here explains the meaning behind this metaphor, that Allah likens them to someone climbing into the sky because the higher the place, the lower the oxygen level, and the respiratory rate increases as a form of the body's adaptation to meet its oxygen needs. This results in a sensation of tightness and constriction in the chest

Thus, although the progressive quasi-objectivist typology and the quasi-subjectivist typology both have the characteristic of contextual interpretation, the difference lies in the thesis writer's ability to contextualize the meaning of the verse. This typology has the potential to present contextual interpretations without neglecting textual meaning, so the resulting interpretation does not seem overly forced to fit the thesis writer's research context but also does not appear too rigid and bound to the text's meaning.

Table 5. Frequency Distribution of Scientific Integration Directions

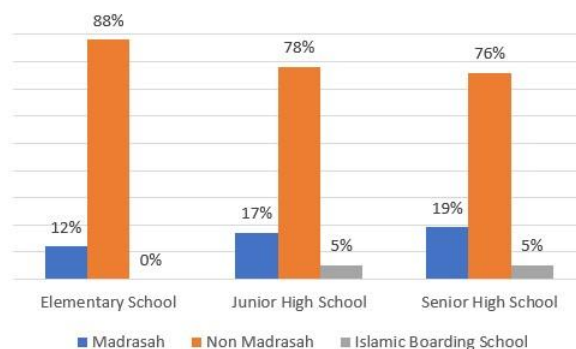
Year of Publication	Direction of Scientific Integration	Total Number of Qur'anic Citation	Percentage (%)
2021-2023	Integration of Verses into Educational Topics	161	82 %
	Integration of Verses into the Topic of Biology	35	18 %
	Others	0	0 %
	Total	196	100 %

Furthermore, based on the data analysis (table 5) as shown in the table above, it is known that the most common direction of integration is the integration of verses on the topic of education, while integration on the topic of biology still lacks adequate attention.

Implications of Socio-Cultural Realities on the Phenomenon of Scientific Integration

In the perspective of the sociology of knowledge, humans as subjects and producers of knowledge are very naive when they fully claim that their knowledge products come purely from themselves because the knowledge that arises is certainly influenced by the process of social interaction. The relationship between the individual and the construction of their knowledge goes through three dialectical processes: externalization, objectification, and internalization. (Berger & Luckmann, 2012).

In short, it can be understood that through externalization, the academic social reality present at the university, particularly in the Department, has recently played a significant role in shaping the tendencies of integration typology and student interpretation typology. Thus, the integration typology and interpretation typology commonly used today are cultural products of the knowledge distribution within the university/Department. Then, through objectification, the typologies present today become objective realities due to activities that are repeatedly performed, forming a pattern and continuously produced as understood actions. Consequently, the process of knowledge production by students as thesis writers involves the dialectic of objective reality and individual subjectivity. Through internalization, the understanding of scientific integration among students today is a product of the tendency towards scientific integration typology as an objective reality. Therefore, the tendency of typology today is influenced by previous socio-cultural realities, making it a cultural product derived from knowledge input in the form of lectures based on the curriculum and syllabus. On the other hand, the typology tendency itself also acts as a cultural producer because once it becomes a distinct social reality, it will influence subsequent socio-cultural realities, with the output in the form of integrative understanding and students' scientific works. This cycle runs simultaneously and has implications for the overall socio-cultural reality within the Department. This cycle runs simultaneously and has implications for the socio-cultural reality within the Department as a whole.

**Figure 8.** Overview of the Percentage of Educational Background of Thesis Writing Students

Source: Data Analysis Results

From the data (figure 8), it is evident that non-madrasah alumni dominate compared to madrasah and Islamic boarding school, so it is not surprising that religious scholarly tools, especially tafsir, are not very familiar to thesis writers. Consequently, these scholarly tools are not prominently featured in the framework of knowledge integration in students' theses nowadays, especially in non-religious departments. Meanwhile, referring to the curriculum and RPS data in the Biology Education Department as mentioned by the Head of the Internal Quality Assurance Group of the Department, "there are no departmental courses specifically discussing the concept of knowledge integration and its methodology. Instead, knowledge and skills within the framework of knowledge integration are largely determined by religious courses offered by the university, such as Arabic Language, English Language, Qur'anic Studies, Hadith Studies, Fiqh, Islamic Cultural History, and others." These courses are presented as instrumental knowledge to support and facilitate the implementation of the concept of scientific integration in each department.

Furthermore, there are no mandatory tafsir courses at the university level, nor are there any courses in the departments that specifically focus on tafsir studies related to their respective fields. It is known that tafsir is one of the important scientific bases for integrating science and religion. However, the practice of tafsir is often reflected in several courses in the Biology Education department, such as animal ecology, plant ecology, and others. Nevertheless, according to the informant, not all Semester Learning Plans (RPS) of the lecturers include Islamic integration, and not all courses have assessments that reflect the integration of science.

Conclusion

This study found that the phenomenon of scientific integration in the Department of Biology Education can be classified into two forms. First, there are theses whose research themes are not directly related to the integration of science but still incorporate elements of integration (Qur'an-Tafsir). Second, there are theses that focus explicitly on the integration of science, making the use of verses and their interpretations more prominent.

The most dominant tendency in the typology of scientific integration is the confirmative integration pattern, with the primary direction being the integration of verses into educational topics. The most frequently appearing interpretation typology is the quasi-objectivist traditionalist. The current trends in scientific integration within the Biology Education Department are influenced by existing socio-cultural realities. Social and cultural interactions among students, lecturers, and the broader academic environment significantly shape the patterns of scientific integration.

However, the absence of guidelines and policies that technically regulate the operationalization of knowledge integration at UIN Alauddin Makassar leads to a lack of collective understanding. This results in subjective practices and a lack of standardized patterns of knowledge integration. The relationship between thesis writers and their social reality indicates an active dialectical process that forms tendencies in integration patterns and specific interpretations. This process is reflected in three important stages: externalization, objectivation, and internalization.

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