



Integrating Science and Religion through Academic Writing: A Case Study at MAN Insan Cendekia

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ABSTRACT

The Indonesian Ministry of Religious Affairs has emphasized the integration of science and religion within madrasah education to improve graduate quality. MAN Insan Cendekia has been at the forefront of this initiative, aiming to enhance student literacy and methodological rigor through academic writing programs. This study aims to evaluate the implementation and impact of the academic writing program at MAN IC Tanah Laut, focusing on how it integrates science and religion through a multidisciplinary approach. Employing a case study approach, the research involved data collection from the madrasah headmaster, deputy academic, academic writing program coordinators, and supervising teachers. Data analysis was conducted using the Miles and Huberman model, which includes data condensation, display, and conclusion drawing. The academic writing program at MAN IC Tanah Laut began in 2016 as an extracurricular activity, requiring all students to participate and be guided by teachers in researching contemporary issues from various disciplinary perspectives. By 2018, it had become a co-curricular flagship initiative and was integrated into the core curriculum as a graduation requirement for grade XII by 2021. The program's evolution contributed significantly to the school's achievements, including securing a second runner-up position in the MYRES competition in 2021 and winning a championship in the field of religion with a scientific emphasis in 2022. These outcomes demonstrate the program's success in effectively blending scientific and religious education. The research underscores the necessity of designing holistic curricula that foster interdisciplinary learning. It highlights the importance of enhancing methodological quality in academic writing programs, investing in teacher development, implementing authentic assessment models, and engaging the community. These findings offer valuable insights for other madrasahs and religious institutions aiming to integrate science and religion in their educational frameworks.

ABSTRAK

Kementerian Agama Republik Indonesia telah menekankan pentingnya integrasi ilmu pengetahuan dan agama dalam pendidikan madrasah untuk meningkatkan kualitas lulusan. MAN Insan Cendekia berada di garis depan inisiatif ini dengan tujuan meningkatkan literasi siswa dan ketelitian metodologis melalui program penulisan akademik. Penelitian ini bertujuan untuk mengevaluasi pelaksanaan dan dampak program penulisan akademik di MAN IC Tanah Laut, dengan fokus pada bagaimana program tersebut mengintegrasikan ilmu pengetahuan dan agama melalui pendekatan multidisipliner. Menggunakan pendekatan studi kasus, penelitian ini melibatkan pengumpulan data dari kepala madrasah, wakil akademik, koordinator program penulisan akademik, dan guru pembimbing. Analisis data dilakukan menggunakan model Miles dan Huberman, yang mencakup kondensasi data, tampilan data, dan penarikan kesimpulan. Program penulisan akademik di MAN IC Tanah Laut dimulai pada tahun 2016 sebagai kegiatan ekstrakurikuler, yang mewajibkan semua siswa untuk berpartisipasi dan dibimbing oleh guru dalam meneliti isu-isu kontemporer dari berbagai perspektif disiplin ilmu. Pada tahun 2018, program ini telah berkembang menjadi inisiatif unggulan ko-kurikuler dan diintegrasikan ke dalam kurikulum inti sebagai syarat kelulusan untuk kelas XII pada tahun 2021. Evolusi program ini memberikan kontribusi signifikan terhadap pencapaian sekolah, termasuk meraih posisi juara kedua dalam kompetisi MYRES pada tahun 2021 dan memenangkan kejuaraan di bidang agama dengan penekanan ilmiah pada tahun 2022. Hasil ini menunjukkan

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keberhasilan program dalam menggabungkan pendidikan ilmiah dan agama secara efektif. Penelitian ini menekankan pentingnya merancang kurikulum holistik yang mendorong pembelajaran lintas disiplin. Penelitian ini juga menggarisbawahi pentingnya meningkatkan kualitas metodologis dalam program penulisan akademik, investasi dalam pengembangan guru, penerapan model penilaian otentik, dan keterlibatan masyarakat. Temuan ini memberikan wawasan berharga bagi madrasah dan lembaga keagamaan lain yang bertujuan mengintegrasikan ilmu pengetahuan dan agama dalam kerangka pendidikan mereka.

Introduction

The integration of science and religion is increasingly recognized as vital in addressing complex global challenges and fostering a more comprehensive understanding of both the world and the human self (Sahin, 2018). This integration involves merging scientific knowledge with religious beliefs to create a holistic educational approach that enriches students' understanding and application of both domains. It aims to ensure that scientific practices and developments are informed by ethical and spiritual values, thereby promoting sustainable and responsible progress (Marshall, 2021; Tambak et al., 2022; Tomalin et al., 2019).

Academic writing is a crucial component of this integration, serving as a tool for students to articulate and analyze complex ideas that bridge scientific and religious perspectives (Bean & Melzer, 2021). This type of writing emphasizes critical thinking and the ability to synthesize information from various sources, which is essential for developing a well-rounded worldview. In the context of integrating science and religion, academic writing helps students explore and express how these seemingly distinct fields can complement and inform each other. Elevating academic writing programs involves integrating them into the core curriculum and aligning them with the broader educational objectives of blending science and religion. This approach ensures that students are not only proficient in academic writing but also equipped to apply their insights within an interdisciplinary framework (Wilmot & McKenna, 2018).

Despite the increasing emphasis on integrating science and religion at higher education levels (Fauzi et al., 2022; Suryadi et al., 2018), there is a notable research gap concerning its implementation at the high school level, particularly in madrasahs. While extensive research exists on this integration in universities (Suprpto & Sumarni, 2022), studies focusing on high school education are scarce. This lack of research suggests that the integration of science and religion in high school curricula remains limited (Sahil et al., 2024; Sa'idah et al., 2023). This gap is particularly significant given the potential benefits of a holistic educational approach that combines scientific and religious education (Ludwig & El-Hani, 2020). Many schools continue to rely on traditional methods that separate these fields, thereby missing opportunities for a more integrated learning experience.

In Indonesia, the integration of science and religion at the high school level is often achieved through boarding schools, where religious activities are woven into daily life and general education (Hakim & Herlina, 2018; Saepudin, 2019). Boarding schools provide a unique environment where students can simultaneously engage in religious and academic learning, preparing them for future challenges in both domains (Afista & Abu Bakar, 2020; Maimunah et al., 2021). The demand for such integrated educational experiences reflects society's expectation for schools to offer both high religious and academic standards (Jaedi et al., 2022; Mustaqim & Azani, 2024; Muttaqin et al., 2020).

MAN Insan Cendekia, a recognized State Islamic Senior High School, stands out in these integration efforts (Mastiyah & Lisyawati, 2022; Mohsen et al., 2023; Sopandi, 2019; Taufik, 2022). Established with the goal of producing graduates who excel in both science and Islamic values, MAN Insan Cendekia has been a pioneer in blending these fields.

Initiated by Prof. Dr. Ing. B.J. Habibie through the BPPT and STEP programs, the school aims to standardize science and technology education within an Islamic context (Junaedi et al., 2023; Nasser et al., 2022). In South Kalimantan, MAN Insan Cendekia Tanah Laut exemplifies this approach by integrating science and religion within a boarding school framework.

In South Kalimantan, MAN Insan Cendekia Tanah Laut is a pioneering institution that integrates science and religion through a boarding school format. It aims to cultivate students with a thorough understanding of religion while excelling in science and technology. The school fosters skill development in these fields and instills strong religious and moral values. The objectives of this research are to explore the effectiveness of the academic writing program at MAN IC Tanah Laut in integrating science and religion, to examine the management practices that support this integration, and to assess the program's overall contribution to enhancing the synergy between scientific and religious education. Specifically, the study aims to understand why the academic writing program excels in this integration, investigate how the program is managed, and evaluate its impact on fostering a holistic educational approach that bridges scientific inquiry with religious principles.

Method

This research utilizes a qualitative method with a case study approach to provide an in-depth understanding of the academic writing program at MAN IC Tanah Laut and its impact on integrating science and religion in education. The case study approach was chosen because it allows for a detailed examination of the program within its real-life context, offering insights into its effectiveness and implementation.

The selection of MAN Insan Cendekia Tanah Laut for this research is supported by its exceptional track record in integrating science and religion. The school achieved first place in 2020 with research blending scientific inquiry and local culture, was second runner-up in Science, Mathematics, and Technology in 2021, and won first place in 2022 with a study combining scientific and religious analysis. These accomplishments underscore the school's effective integration of science and religion through its academic writing programs, making it a prime candidate for this research.

The case study approach was chosen to explore the specific practices and outcomes of the academic writing program at MAN IC Tanah Laut, providing a focused analysis of how the program facilitates the integration of science and religion. The selection of participants was purposive, including key stakeholders such as the headmaster, the academic vice principal, the coordinator of the academic writing program, and mentor teachers. This selection ensures that insights are gathered from those directly involved in or overseeing the program's implementation.

Data collection was carried out from October 2023 to April 2024 through a combination of interviews, observations, and document analysis.

1. Semi-structured interviews were conducted by the researchers with the headmaster, academic vice principal, academic writing program coordinator, and mentor teachers. Each interview, lasting approximately 45-60 minutes, aimed to gather detailed insights into the program's history, management practices, and its impact on integrating science and religion. Open-ended questions were used to encourage comprehensive responses and allow for flexibility in addressing emerging issues.
2. The researchers performed observations in a participatory manner, actively engaging in the environment to understand the program's implementation. Key aspects observed included interactions between students and teachers during

academic writing sessions and the integration of religious and scientific content in student projects.

3. Various documents, including program policies, reports, and records related to the academic writing program, were reviewed by the researchers. These documents provided additional context and supported the qualitative data gathered from interviews and observations.

Data analysis followed the Miles and Huberman model, consisting of three stages:

1. Data Condensation: The researchers systematically reduced and focused on relevant data to identify key themes and patterns related to the program's implementation and impact.
2. Data Display: Data were organized and presented in a manner that facilitated interpretation and comparison, using matrices and charts.
3. Conclusion Drawing and Verification: The researchers drew conclusions based on the condensed and displayed data, with findings verified through triangulation and member checking.

Ethical considerations were paramount throughout the research. Informed consent was obtained from all participants, ensuring they were fully aware of the study's purpose and their rights. Confidentiality was maintained by anonymizing participant identities and securely storing data. Ethical approval was sought and granted in accordance with institutional guidelines to ensure that the research adhered to ethical standards, particularly given the involvement of educational staff and students.

Results

The Role of the Academic Writing Program at MAN IC Tanah Laut in Integrating Science and Religion

The Academic Writing Program (AWP) at MAN IC Tanah Laut was introduced in 2016 as an extracurricular activity aimed at providing research experience and opportunities for writing scientific papers. By 2018, the program had become a flagship initiative of the madrasah and was integrated into co-curricular activities. In 2021, it was incorporated into the core curriculum as a graduation requirement for twelfth-grade students. The evolution of the program highlights its growing importance in the school's educational framework. According to the AWP coordinator, "Since 2016, the research program has actually been implemented but it was still in the form of extracurricular activities. It wasn't until 2018 that it started as a flagship program of the madrasah and was included in the co-curricular activities, and in 2021 as part of the core curriculum." (NF, AWP Coordinator, personal communication, 17 January 2024)

The AWP at MAN IC Tanah Laut integrates scientific knowledge with religious perspectives through a multidisciplinary approach. This integration is exemplified by the school's participation in MYRES 2021 with the research titled "Ethnobotanical and Physicochemical Studies of Sungkai Leaves in the Meratus Dayak Community." Since 2021, the program has promoted research themes such as Mathematical Anthropology, Social Ecology, and the intersection of Fiqh and Biology. The integration is approached through three models:

1. Textual Alignment: This model involves referencing Islamic texts, such as the Quran and Hadiths, to support scientific topics. A teacher explained, "Incorporating Islamic Sharia texts into the science curriculum is essential for aligning our teachings with Islamic principles." (MMY, mentor teacher, personal communication, 21 November 2023)
2. Holistic Understanding: This model explores scientific theories from a faith-based perspective, recognizing the connection between scientific theories and divine principles. As noted by a mentor teacher, "Understanding scientific theories from a

faith-based perspective allows us to see the connection between divine principles and natural phenomena.” (YY, mentor teacher, personal communication, 21 November 2023)

3. Critical Analysis: This model involves analyzing scientific theories that may conflict with Islamic teachings to reconcile discrepancies. The AWP coordinator emphasized, “When scientific theories seem to conflict with Islamic teachings, it is crucial to critically analyze these discrepancies.” (NF, AWP Coordinator, personal communication, 17 January 2024)

Teachers from various disciplines contribute diverse perspectives to students' research through multidisciplinary approaches. They also facilitate Focus Group Discussions (FGDs) to support research development. One teacher highlighted, “The supervising teachers come from various subjects, so their perspectives differ. Multidisciplinary input deepens students' understanding and strengthens their research.” (MSy, mentor teacher, personal communication, 24 November 2023).

The program encourages collaborative research across different classes. Students typically select their team members, but teachers may intervene to ensure balanced and effective teams. The coordinator noted, “Sometimes the selection of team members will be left to the students. If students have no experience, teachers will select group mates for them.” (NF, AWP Coordinator, personal communication, 17 January 2024).

As part of their graduation requirement, twelfth-grade students must complete a scientific paper, following a process similar to undergraduate programs. This includes topic selection, proposal preparation, seminars, data collection, report writing, and presentations. The AWP coordinator described the process: “The system is the same as undergraduate programs. They find interesting research topics, prepare proposals, seminars, collect data, make reports, and presentations. Then, it is examined by teachers here. It can also involve lecturers with relevant academic backgrounds.” (NF, AWP Coordinator, personal communication, 18 January 2024).

Students independently design and conduct their research, defend their final reports before examiners, and make necessary revisions. The final reports are archived in the school library, reflecting the program’s commitment to producing and preserving high-quality academic work. A student participant added, “The process requires significant commitment and independence, demonstrating our ability to manage and execute research projects through various stages.” (AM, student, personal communication, 08 February 2024).

Table 1. Integrating Science and Religion Through Academic Writing Program

Key Findings	Description
History and Development	The AWP was introduced in 2016 as an extracurricular activity aimed at research experience and scientific paper writing. By 2018, it became a flagship initiative and was integrated into co-curricular activities. In 2021, it was incorporated into the core curriculum as a graduation requirement.
Integration of Science and Religion	Textual Alignment: References Islamic texts (Quran and Hadiths) to support scientific topics. Holistic Understanding: Explores scientific theories from a faith-based perspective, recognizing the connection between scientific theories and divine principles. Critical Analysis: Analyzes scientific theories that may conflict with Islamic teachings to reconcile discrepancies.
Multidisciplinary Guidance	Teachers from various disciplines provide diverse perspectives and facilitate Focus Group Discussions (FGDs) to support

	research development. Multidisciplinary input enhances students' understanding and strengthens their research.
Collaborative Research	Encourages collaborative research across different classes. Students select their team members, with teacher intervention to ensure balanced teams if needed.
Graduation Requirement Process	Twelfth-grade students must complete a scientific paper as a graduation requirement. The process includes topic selection, proposal preparation, seminars, data collection, report writing, and presentations. Final reports are defended before examiners, revised, and archived in the school library.

Based on Table 1, which illustrates an academic writing program that integrates science and religion, this program has shown significant development since its introduction in 2016. Initially, it began as an extracurricular activity, but it has successfully evolved into an integral part of the core curriculum, becoming a mandatory graduation requirement by 2021. The integration of science and religion in this program is achieved through a textual approach that links scientific theories with Islamic teachings, such as the Quran and Hadiths, as well as through critical analysis aimed at reconciling discrepancies between scientific theories and Islamic teachings. The program also involves multidisciplinary guidance, which enriches students' perspectives, supports research development through Focus Group Discussions (FGDs), and encourages collaborative research among students. The graduation process, which requires students to complete a scientific paper, emphasizes the importance of a holistic understanding between science and religious principles, as well as strong research skills, which ultimately become an inseparable part of the students' academic journey.

Management Practices Supporting the Integration of Science and Religion

Teachers are fundamental to the success of the Academic Writing Program (AWP) at MAN IC Tanah Laut. Their engagement is crucial for the program's implementation and effectiveness. As emphasized by the Academic Vice Principal, "The role of the supervising teachers is significant because the program would not run without the willingness and involvement of teachers to collaborate." (SS, Academic Vice Principal, personal communication, 26 October 2023).

Participation in the AWP is mandatory for graduation, which significantly motivates students. The program's requirement for writing scientific papers, akin to a college thesis, encourages active student involvement. Research projects with potential for further development are selected for competition preparation. "All students are required to write scientific papers, similar to a thesis in college." (SS, Academic Vice Principal, personal communication, 26 October 2023).

The AWP starts in the tenth grade with a focus on teaching research methodologies and academic literature. Students participate in discussions, analyze research articles, and learn various research methods, fostering an academic environment conducive to research. "Since the tenth grade, we have introduced this academic climate. They will learn the process of conducting research." (NF, AWP Coordinator, personal communication, 18 January 2024).

Students are generally grouped randomly for research projects. However, for competitions with limited slots, selection is based on criteria such as research ideas, skills, and perseverance to ensure quality and effectiveness. "Students are grouped randomly. But if there is a competition, especially if the participants are limited, we apply selection based on research ideas, competence, and commitment." (NF, AWP Coordinator, personal communication, 22 January 2024).

The madrasah supports the AWP by integrating it into the core curriculum and providing supervision. The Academic Vice Principal oversees the program, with assistance from the AWP Coordinator and other teachers, “This is an academic program. But I am assisted by Mr. Nahri as the coordinator for Scientific Papers. Later, there will be other teachers who will guide the Scientific Paper groups.” (SS, Academic Vice Principal, personal communication, 22 January 2024).

The AWP Coordinator is responsible for selecting mentor teachers, scheduling seminars and presentations, organizing examiners, and facilitating student participation in scientific competitions. “I handle selecting mentor teachers based on student research themes, scheduling proposal seminars and presentations, organizing examiners, and facilitating student participation in scientific competitions.” (NF, AWP Coordinator, personal communication, 22 January 2024).

Mentor teachers are crucial for guiding students, stimulating their curiosity, and assisting with research challenges. They help students access relevant materials and overcome obstacles. “Each supervising teacher is directed to always be ready to help students overcome obstacles in research.” (NF, AWP Coordinator, personal communication, 22 January 2024).

The program benefits from significant support from the school, including special budgets and necessary facilities, as well as moral and financial support from parents. “Academic writing program is a madrasah's flagship program, so we fully support it. Special budgets are provided for research competition activities.” (SS, Academic Vice Principal, personal communication, 22 January 2024). The AWP emphasizes developing students' research skills, logical thinking, and curiosity. Teachers initiate discussions to foster scientific thinking and guide students in accessing current research. “Initially, we need to familiarize students with this new environment and the academic expectations. The key is for teachers to stimulate students' curiosity, then spark discussions to deepen their understanding and engagement with the research process. This approach helps students adapt to the rigorous demands of academic writing and research.” (MMY, mentor teacher, personal communication, 21 November 2023).

The AWP also focuses on developing collaborative and communication skills through activities such as proposal seminars and presentations. Students practice public speaking, teamwork, and effective communication. “This AWP is a platform for developing students' collaborative and communication skills.” (SS, Academic Vice Principal, personal communication, 26 October 2023).

Table 2. The Academic Writing Program Management

Key Findings	Description
Teacher Involvement	Teachers are crucial to the AWP's success, essential for its implementation and effectiveness.
Student Motivation and Participation	Participation in the AWP is mandatory for graduation, which significantly motivates students to engage actively.
Program Implementation	The program starts in the tenth grade, focusing on research methodologies and academic literature.
Student Grouping and Selection	Students are generally grouped randomly, but for competitions, selection is based on research ideas, skills, and perseverance.
Role of the Madrasah	The madrasah integrates the AWP into the core curriculum and provides supervision under the Academic Vice Principal.

Coordinator Responsibilities	The AWP Coordinator selects mentor teachers, schedules seminars and presentations, organizes examiners, and facilitates competition participation.
Mentor Teachers' Roles	Mentor teachers guide students, stimulate curiosity, and help overcome research challenges.
Support and Sustainability	The program receives support from the school, including special budgets, facilities, and moral support from parents.
Student Development	The AWP fosters research skills, logical thinking, and curiosity. Teachers guide discussions and access to current research. The AWP implements a multidisciplinary approach, allowing students to integrate science and religion and develop cross-disciplinary skills.
Skills Development	The AWP helps develop students' communication and collaboration skills through public speaking, proposal seminars, and team projects.

Based on Table 2, the management of the Academic Writing Program (AWP) demonstrates that teacher involvement, student motivation, and support from the madrasah are key factors in the success of this program. The AWP, which begins in the tenth grade, effectively builds students' research skills, logical thinking, and curiosity through a multidisciplinary approach that integrates science and religion. Random student grouping, with special selection for competitions based on research ideas, skills, and perseverance, ensures the development of essential communication and collaboration skills. The role of mentor teachers in guiding students and the solid coordination of the AWP enable the structured implementation of the program, supported by adequate resources from the school and moral support from parents, thereby ensuring the sustainability of this program.

The Program's Contribution to Enhancing the Integration of Science and Religion

The Academic Writing Program is periodically evaluated by the Academic Vice Principal and the school principal to assess its effectiveness. Evaluations focus on students' research performance, facility needs, and collaboration with external parties. The Academic Vice Principal stated, "The Principal and I evaluate periodically. We observe the difficulties faced during research and competitions. We add laboratory equipment facilities, cooperate through MoUs with institutions deemed capable of improving quality, and explore these." (SS, Academic Vice Principal, personal communication, 22 January 2024). Evaluations inform decisions on enhancing the program, such as procuring additional laboratory equipment based on research needs and improving collaborations with research institutions and universities.

In 2022, MAN IC Tanah Laut won the MYRES award in the religious field with research titled "Comparison of Physical, Chemical, and Biological Properties Related to Differences in Najis Law on Baul Al-Shobiyyi wa Al-Shobiyyah." This program has demonstrated a significant evolution from an extracurricular activity to an integral component of the school curriculum.

The implementation of a multidisciplinary approach has also become one of the program's strengths, allowing students to broaden their understanding of science and religion while developing cross-disciplinary research skills. The program's success in producing quality research is also evidence that this approach is effective in advancing education at the school. The program has a positive impact on students' ability to collaborate and work effectively in teams, essential skills for the 21st century. As highlighted by the AWP Coordinator, "To complete the research, collaboration is needed.

Otherwise, it stalls. So, students learn how to prioritize common interests, learn to work together, divide tasks, and appreciate the contributions of team members.” (NF, AWP Coordinator, personal communication, 18 January 2024).

The AWP at MAN IC not only focuses on developing knowledge and research skills but also pays attention to the development of students' social skills, such as communication and collaboration. Through various activities such as guidance consultations, proposal seminars, and result presentations, students are given the opportunity to speak in public, communicate with mentor teachers, and work together in teams. This helps them develop effective communication skills, respond to questions well, and collaborate in teams. “This AWP is a platform for developing students' collaborative and communication skills. How they collaborate with group mates and mentor teachers, this enhances collaboration. Collaboration can also involve external parties. Later, they will also practice presenting results. This is communication practice. Conveying ideas and thoughts.” (NF, AWP Coordinator, personal communication, 18 January 2024).

The program currently partners with institutions like the Faculty of Mathematics and Natural Sciences at Lambung Mangkurat University and the Health Polytechnic of the Ministry of Health in Banjarmasin. These collaborations provide technical support and specialized equipment for competition preparation, as mentioned: “There is cooperation, especially in competition preparation.” Collaborations with external institutions enhance the program by providing additional resources, facilities, and networking opportunities, thus improving the quality of student research and practical experience.” (SS, Academic Vice Principal, personal communication, 22 January 2024).

Plans include establishing a Madrasah research journal and collaborating with universities to improve the program's quality. The AWP coordinator noted, “Almost all university departments have scientific journals. We want one too. So, we learn its management to get it indexed in SINTA.” (NF, AWP Coordinator, personal communication, 22 January 2024). Plans are underway to collaborate with various institutions and communities to enrich students' research experiences. The AWP coordinator highlighted, “We plan to collaborate with several institutions or universities to enrich research studies and methodologies.” (NF, AWP Coordinator, personal communication, 22 January 2024).

To ensure that the program can adapt to the latest developments in science, religion, and education, The AWP coordinator encourages teachers and students to continuously explore the latest references through national and international journals and ongoing scientific discourses. Here's a quote from the interview: “We always motivate students to keep abreast of the latest developments. Teachers often bring in recent news or research into the classroom for discussion. This is very helpful in the Merdeka curriculum so that students can think holistically.” (YY, mentor teacher, personal communication, 18 January 2024).

This program also helps students integrate science with religion in their thinking and research through guidance and direction from relevant teachers. Although not all research involves integration between science and religion, mentor teachers, subject teachers, and the AWP coordinator are ready to provide guidance to students if needed. The AWP coordinator states, “This integration doesn't always apply to all research. It means there are some research projects that focus solely on social or religious fields, while others focus solely on science. But we and the teachers always seek opportunities for multidisciplinary approaches, as the chances of success are higher.” (NF, AWP Coordinator, personal communication, 18 January 2024).

The academic climate at MAN IC Tanah Laut has significantly improved due to the Academic Writing Program (AWP). This program fosters investigative attitudes and critical, systematic thinking among students. The Academic Vice Principal notes, “AWP encourages students to think critically and systematically, positively impacting their

learning.” (SS, Academic Vice Principal, personal communication, 22 January 2024). MAN IC Tanah Laut also recognizes outstanding students by publishing their research in scientific journals and featuring their achievements through MAN IC Public Relations or external news channels. The AWP coordinator adds, “Publication in scientific journals and MAN IC HUMAS news is a reward that recognizes students' work and competence, significantly impacting their academic careers.” (NF, AWP Coordinator, personal communication, 22 January 2024).

Table 3. The Impact of the Academic Writing Program (AWP) on the Integration of Science and Religion

Key Findings	Description
Program Evaluation	The Academic Writing Program (AWP) is periodically evaluated by the Academic Vice Principal and the school principal. Evaluations focus on research performance, facility needs, and external collaborations.
Achievements	In 2022, MAN IC Tanah Laut won the MYRES award in the religious field for research on Najis law. The program has evolved from an extracurricular activity to a core curriculum component.
Institutional Partnerships	The program partners with institutions such as Lambung Mangkurat University and the Health Polytechnic of the Ministry of Health. These collaborations provide technical support and equipment.
Continuous Improvement	The program encourages teachers and students to explore the latest references and developments in science, religion, and education. Plans include establishing a madrasah research journal, collaborating with universities, and enriching students' research experiences.
Integration of Science and Religion	Guidance from teachers ensures integration of science and religion in research when applicable. Multidisciplinary approaches are encouraged, although not all projects focus on integration.
Academic Climate Improvement	The AWP fosters investigative attitudes, critical thinking, and systematic approaches among students. Recognizing and publishing outstanding student research also positively impacts their academic careers. The program enhances students' ability to collaborate, prioritize common interests, and work effectively in teams, essential skills for the 21st century.
Recognition of Achievements	Outstanding students are recognized through publications in scientific journals and features in news channels.

Based on table 3, the Academic Writing Program (AWP) at MAN IC Tanah Laut has demonstrated a significant impact on the integration of science and religion. Initially an extracurricular activity, the program has now become a core component of the curriculum, showcasing strong evolution through regular evaluations by the school leadership. Collaborations with institutions such as Lambung Mangkurat University and the Health Polytechnic of the Ministry of Health have strengthened the program by providing technical support and adequate equipment. One notable achievement is the 2022 MYRES award in the field of Najis law research, marking a successful integration of religion into scientific research. Additionally, the program not only enhances the

academic climate by fostering investigative attitudes and critical thinking but also enriches students' research experiences through multidisciplinary approaches, even though not all projects focus on integration. The recognition of students' achievements through publications in scientific journals and media further reinforces the positive impact of this program on students' academic careers and their ability to work in teams, which are essential skills in the 21st century.

Discussion

The integration of science and religion within the Academic Writing Program (AWP) at MAN IC Tanah Laut demonstrates a multidisciplinary approach that enriches students' critical thinking by merging scientific data with religious insights. This approach fosters advanced analytical abilities, robust research habits, and a comprehensive understanding of interdisciplinary connections. It also enhances communication and teamwork skills through presentations and collaborative efforts, prepares students for academic competitions, and acknowledges their accomplishments.

The Academic Writing Program (AWP) at MAN IC Tanah Laut exemplifies both a multidisciplinary approach and Jerome Bruner's theory of discovery learning, which underscores the importance of active exploration and self-directed learning in the acquisition of knowledge (Ozdem-Yilmaz & Bilican, 2020). The program facilitates students' integration of scientific data with religious perspectives, enabling them to independently construct their own understanding of these intersecting domains. It emphasizes problem-solving through critical analysis and the reconciliation of discrepancies between scientific theories and Islamic teachings, thereby promoting a cohesive and unified comprehension. Additionally, the AWP enhances collaborative learning through teamwork and presentations, reinforcing the interactive and peer-feedback components central to discovery learning. Moreover, the program encourages inquiry-based research, motivating students to question, investigate, and analyze topics, which aligns with discovery learning's focus on self-directed exploration and deeper understanding.

The Academic Writing Program (AWP) at MAN IC Tanah Laut employs a multifaceted approach to integrating science and religion through three distinct models. The first model, Textual Integration, aligns scientific topics with Islamic teachings by referencing Quranic texts and Hadiths. This model ensures that scientific discussions are consistent with religious doctrines, utilizing relevant texts to support scientific material rather than imposing scientific theories on religious meanings (Mansour, 2011; Zabidi et al., 2021). The second model, Faith-Based Understanding, examines scientific theories through a faith-based lens, emphasizing the inherent connection between scientific knowledge and Allah's decrees without directly seeking specific religious texts (Newberg, 2018; Rutjens et al., 2018). This approach reflects the belief that natural phenomena are ultimately linked to divine principles, suggesting that studying science also involves recognizing the greatness of Allah's creation (Ferngren, 2022; McGrath, 2020). The third model, Critical Analysis of Conflicts, addresses discrepancies between scientific theories and Islamic teachings to achieve a coherent understanding of both domains (Yusuf, 2022). This model involves identifying potential conflicts, critically analyzing these theories against Islamic principles, and resolving contradictions where necessary. It emphasizes the need to explain discrepancies, whether due to misinterpretations of religious texts or inaccuracies in scientific findings, and to offer alternative explanations consistent with Islamic values (Mårtensson & Vongraven Eriksen, 2018; Sahin, 2018; Mujahidin, 2018).

In interpreting these approaches within the context of existing literature and theoretical frameworks, it becomes clear that the AWP's integration models contribute significantly to interdisciplinary understanding. The Textual Integration model ensures

alignment with religious teachings while engaging with scientific content, thereby fostering a balanced perspective. Faith-Based Understanding broadens the scope of scientific inquiry by situating it within a divine framework, reinforcing the view that scientific and religious knowledge are interconnected. Critical Analysis of Conflicts highlights the program's commitment to resolving discrepancies and maintaining a coherent synthesis of science and religion, underscoring the importance of both rigorous analysis and contextual alignment with Islamic principles. These approaches collectively advance the field by demonstrating how structured integration can address complex interdisciplinary issues while contributing to a more nuanced understanding of both science and religion.

The program encourages rigorous research and analysis, which is essential for developing advanced critical thinking skills. This approach mirrors Paul and Elder's Critical Thinking Framework (Elder & Paul, 2020), which advocates for systematic analysis and evaluation of information to make reasoned judgments. The AWP's focus on deepening understanding through complex concepts aligns with this framework by promoting active engagement with diverse information sources, fostering higher-order thinking skills essential for navigating the digital landscape. This approach also reflects Facione's Delphi Report, which emphasizes the importance of evaluating arguments, analyzing issues, and making informed decisions (Sharadgah et al., 2023).

The program's emphasis on collaborative projects and presentations supports the development of communication and teamwork skills, which are crucial in the digital era. This focus aligns with Vygotsky's Social Development Theory, which highlights the role of social interaction and collaborative learning in cognitive development (Polat et al., 2022). Vygotsky's theory underscores the importance of working with peers to achieve shared goals, reflecting the AWP's strategy to enhance teamwork and effective communication. Additionally, the program's collaborative approach is consistent with Brusilovsky and Miller's work on Collaborative Learning in Digital Environments, which stresses the value of interactive learning technologies in facilitating group work and peer feedback (Farzan & Brusilovsky, 2018).

The integration of science and religion within the Academic Writing Program at MAN Insan Cendekia utilizes a webbed curriculum model, with a research theme as the focal point. This model initiates curriculum development by selecting a central research theme, which then guides the identification of related subjects to provide a comprehensive understanding of the theme (Asdar et al., 2024; Chang & Chen, 2020; Gordon et al., 2020). The webbed model integrates religious content into core subjects, aiming to support students' professionalism by embedding religious doctrines and values relevant to humanitarian and global issues. This approach necessitates collaboration between science and religion teachers with interdisciplinary expertise, allowing them to independently address their respective themes in the classroom (Chan & Erduran, 2023). Within this framework, mentor teachers play a pivotal role by facilitating the integration of themes without necessarily teaching them together, ensuring that religion teachers understand relevant scientific concepts and science teachers grasp integrated religious knowledge. While field experts provide detailed explanations, mentor teachers guide students through the integration process, fostering effective interdisciplinary connections (Fogarty, 1991). The webbed model's advantages include heightened student motivation through engaging themes, its suitability for both experienced and novice teachers, and its facilitation of interdisciplinary team planning. The thematic units central to this model are multidisciplinary, simplifying content standard alignment while maintaining thematic focus. Additionally, the webbed approach enhances team planning by enabling interdisciplinary collaboration across content areas, making it easier to visualize how various activities and ideas interconnect and encouraging the development

of diverse projects and products that reflect the chosen theme (Mulyani et al., 2020; Cheng, 2019).

The Academic Writing Program (AWP) at MAN Insan Cendekia has proven effective in integrating science and religion, yet several crucial dimensions remain inadequately addressed. A primary challenge in this integration process is selecting a cohesive theme, a difficulty also encountered in the AWP at MAN IC Tanah Laut (Puspita et al., 2020; Winarno et al., 2020). This collaborative approach, which begins in grades X and XI and extends to prestigious competitions such as MYRES, requires careful planning and coordination across departments. Despite these efforts, the model faces obstacles such as time constraints and limited understanding among teachers in both scientific and religious fields, which can hinder its effectiveness (Aulia et al., 2023). Additionally, mentor teachers often encounter difficulties in guiding students through the selection of multidisciplinary themes, given the students' substantial autonomy in choosing their research topics. Research on these programs does not sufficiently address the depth of integration between religion and science, the long-term impact on knowledge retention, student autonomy in research, or the cultural and ethical dimensions.

The academic writing program at MAN IC Tanah Laut has not thoroughly evaluated several critical aspects related to the integration of knowledge. The impact of integration models on students' understanding and the comprehensive coverage of scientific and religious integration requires more detailed investigation. According to Tiruneh et al. (2018), understanding the depth of integration involves examining how various contextual layers influence students' learning experiences. Thus, integration models should be assessed within broader educational and social contexts to evaluate their overall impact on students' understanding.

The program's effectiveness in sustaining integrated knowledge over time remains underexplored. Schunk and DiBenedetto (2020) argue that long-term retention of knowledge is closely linked to students' self-efficacy—beliefs in their own capabilities to succeed. Students who believe in their abilities are more likely to persist in their learning efforts, effectively apply what they have learned, and retain knowledge over extended periods. The role of student autonomy in the research process has not been adequately examined. Deci and Ryan's Self-Determination Theory underscores that autonomy, or the sense of control over one's actions and decisions, is crucial for fostering intrinsic motivation and deeper learning (Ryan & Deci, 2020). When students have the freedom to make choices and engage in activities that align with their personal interests and values, they are more motivated and invested in their learning, leading to more meaningful and enduring educational outcomes.

The program has not investigated how cultural perspectives and ethical considerations influence the integration of science and religion. Cultural contexts significantly impact educational processes and outcomes. Understanding how diverse cultural and ethical viewpoints affect the integration process is essential for developing models that are more inclusive and relevant to various cultural contexts (Manrai et al., 2019). This aspect is crucial for creating a more holistic approach that respects and incorporates a range of perspectives within the integration framework.

Conclusion

The Academic Writing Program (AWP) at MAN IC Tanah Laut exemplifies effective integration of science and religion through its structured approach and alignment with the institution's educational objectives. Initiating in the tenth grade, the program guides students through research methodologies and scholarly critique, culminating in a comprehensive scientific paper by the twelfth grade. This structured progression facilitates a multidisciplinary perspective, merging scientific and religious insights. The program's success is supported by centralized oversight, a dedicated coordinator, robust support from the school and parents, university collaborations, and regular assessments, which ensure effective implementation and ongoing enhancement. The program's emphasis on analyzing issues from multiple perspectives contributes significantly to students' academic growth and success, as evidenced by their achievements in research competitions.

This study highlights that MAN IC Tanah Laut is a pioneer in integrating science and religion, offering a flagship program that promotes sensitivity to societal issues, thorough literature review, and multidisciplinary problem-solving. This indicates that similar integration-focused programs could be beneficial for other madrasas aiming to combine science and religion within their curricula. Given the typical subject-block structure of madrasas, incorporating multidisciplinary evaluations could enhance educational effectiveness. However, the study has limitations. It lacks a detailed description of how students develop competence in integrating science and religion, and it does not measure the program's impact on individual students. Additionally, external factors, such as parental support and community involvement, have not been explored.

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