

Developing an Islamic Integrative Science and Religious Curriculum: Case of Sekolah Dasar Islam Terpadu Al-Uswah

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Received: 16/05/2026

Accepted : 24/06/2026

Revised : 09/06/2026

Publication : 27/06/2026

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DOI: <https://doi.org/10.32332/elementary/v12.i1.13646>

Abstract

The integration of science and religion synthesizes empirical knowledge and faith-based values in education. While studies on Islamic-based integrative curriculum have grown, several prior investigations have comprehensively examined the entire curriculum development cycle encompassing planning, implementation, and evaluation, as well as facilitating and hindering factors for

both Science Learning and Islamic Religious Education within a single integrated Islamic elementary school through an in-depth case study. This research addresses that gap by examining the implementation of an Islamic-based integrative curriculum at SD Islam Terpadu Al-Uswah Surabaya, Indonesia. Employing a qualitative case study design, data were collected from eight purposively selected participants using in-depth interviews, classroom observations, and document analysis. Data were analyzed using the interactive model developed by Miles, Huberman, and Saldaña, while data credibility was ensured through source and technique triangulation, member checking, and researcher reflexivity. The research findings indicate that: (1) the curriculum is systematically designed through collaborative planning between Science and Islamic Religious Education teachers, formally integrating *tawhid* (monotheism) and moral values into learning competencies within the framework of the *Kurikulum Merdeka* (Independent Curriculum); (2) instruction is contextual, reflective, and interactive, addressing scientific phenomena alongside Quranic verses; (3) facilitating factors include institutional commitment, teacher collaboration, and a religious school culture, whereas primary obstacles include time constraints, a scarcity of integrative resources, and uneven cross-disciplinary teacher readiness; and (4) holistic evaluation encompasses cognitive, affective, psychomotor, and spiritual dimensions. These findings offer a replicable integrative curriculum model designed to enhance academic competence while fostering religious character development in Islamic primary education.

Keywords: Integrative Curriculum; Islamic Education; Science Learning; Islamic Religious Education; Integrated Islamic Elementary School.

A. Introduction

Contemporary education demands not only academic achievement but also the holistic development of character, critical reasoning, and moral-spiritual grounding. For Integrated Islamic Schools (Sekolah Islam Terpadu/SIT) in Indonesia, this dual mission is foundational. The foundation of SIT is a curriculum that must simultaneously foster scientific literacy and Islamic values, ensuring that graduates have good intellectual competence and religious character (Dardiri & Su'aidi, 2024).

This need to integrate science and Islamic values reflects a broader global discourse on overcoming the dichotomy between religious and secular knowledge. From an Islamic epistemological standpoint, all knowledge whether empirical or revealed originates from Allah, making integration not merely pedagogically desirable but theologically imperative (Sukma et al., 2025). Likewise, international scholarship has shown that integrative curricula produce more engaged, reflective, and ethically oriented learners (Ardi et al., 2024).

In the Indonesian context, previous studies have generated several important insights. Siregar et al (2020) demonstrated that embedding *ayat kauniyah* (Qur'anic verses) in science instruction enhances both conceptual understanding and religious attitudes. Hasbullah & Ramadan (2025) described collaborative integrative curriculum development, while Dardiri & Su'aidi (2024) underscored the role of parental involvement and knowledge integration in producing holistic outcomes.

Septiwiharti et al (2024) further documented how integration strengthens students' *akhlak* (moral conduct) when embedded in thematic lesson planning. At the international level, Mitchell & Tilley (2025) demonstrated through the University College London (UCL) Integrated Engineering Programme that systematically implemented and sustained curriculum integration significantly enhances graduate competencies and professional identity. Hosaini et al., (2024) documented that innovative integrative learning strategies such as Problem-Based Learning (PBL) and Inquiry-Based Learning (IBL) in Islamic religious education contexts markedly increase student engagement and critical thinking at the international level.

Nevertheless, a critical research gap remains. Existing studies are limited in scope, as they primarily examine curriculum implementation without addressing the complete curriculum development process (Maulida, (2022), or adopt an integrative model for a single subject without a comprehensive framework linking planning, design, implementation, and evaluation simultaneously (Januardi & Superman, 2024). Furthermore, the integration of Science Learning and Islamic Religious Education as mutually reinforcing learning domains within a unified curriculum development cycle has not been examined in depth through a single-school qualitative case study. Consequently, few studies provide a holistic, contextually grounded account of how an Islamic-based integrative curriculum is developed, enacted, sustained, and evaluated across both Science Learning and Islamic Religious Education in an Indonesian integrated Islamic elementary school.

To address this gap, the present study offers a comprehensive case study of curriculum integration at SDIT Al-Uswah Surabaya. Its specific contributions are: (1) providing an empirically grounded account of the complete curriculum development process encompassing design, implementation, supporting/inhibiting factors, and holistic evaluation; (2) demonstrating a replicable integrative curriculum model that formally embeds Islamic values into Science Learning objectives, teaching-learning activities, and assessment instruments; and (3) explaining the institutional, pedagogical, and cultural conditions that support the sustainability of Islamic-based curriculum integration. This study aims to: (1) analyze the design and development process of the Islamic-based integrative curriculum in Science Learning and Islamic Religious Education at SDIT Al-Uswah Surabaya; (2) examine the implementation model and integration

strategies used; (3) identify supporting and inhibiting factors; and (4) analyze the evaluation framework employed.

B. Research Methods

This study employed a qualitative case study design (Creswell, 2009), which was particularly appropriate for generating an in-depth, contextually situated understanding of complex educational phenomena within their real-life settings. The case study approach was selected because the research questions required an integrated examination of curriculum design, implementation, and evaluation as they unfolded within a specific institutional context, a level of complexity that neither survey nor experimental designs could adequately capture.

The study was conducted at SDIT Al-Uswah Surabaya, located at Jalan Kejawen Gebang No. 6, Sukolilo, Surabaya, Indonesia. The school was purposively selected as an information-rich case because it had systematically implemented an Islamic-based integrative curriculum across all Grade VI classes.

Eight participants were purposively selected to ensure diverse and complementary informational coverage: (1) the school principal (MN); (2) the vice principal for curriculum (IST); (3) the Grade VI Science teacher (RDA); (4) the Islamic Religious Education teacher (AFA); (5) the Grade VI coordinator (NA); (6) the vice principal for student affairs (SK); and (7–8) two additional informants a Grade VI Science teacher and a Islamic Religious Education teacher who provided cross validation across implementation levels and subject areas. across implementation levels and subject areas. This selection ensured triangulation across decision- making, implementation, and student-facing roles within the curriculum system.

Data were collected from January to February 2026. Three complementary data collection methods were employed, each guided by theory-based instrument frameworks. First, in-depth semi-structured interviews were conducted with all eight participants, using an interview protocol grounded in Tyler (1949) curriculum development principles covering rationale, content selection, instructional strategies, and evaluation. Each interview lasted between 45 and 75 minutes and was audio-recorded with participants' consent. Second, non-participant classroom observations were conducted across eight Science Learning and Islamic Religious Education lessons was conducted using a structured protocol informed by Fogarty (1991) integration typology, targeting indicators of contextual connection, reflective practice, and bidirectional integration. Third, document analysis was conducted on curriculum documents, lesson plans, student reflection journals, assessment rubrics, meeting minutes, and official curriculum decrees was conducted using an analytical framework derived from the Context, Input, Process, and Product (CIPP) evaluation model developed by Stufflebeam & Coryn (2014).

Student questionnaire data were also collected to complement and triangulate the qualitative findings. The questionnaire consisted of 20 items covering eight dimensions of integrative curriculum implementation, including curriculum implementation, the integration of Science and Islamic Religious Education, the integration of Islamic values, instructional strategies, classroom interaction, learning media and resources, process evaluation, religious environment, and teacher modeling. The questionnaire was administered to 24 Grade VI students. Validity testing using Pearson product-moment correlation confirmed all items as valid ($r\text{-count} > r\text{-table} = 0.388$ at $\alpha = 0.05$), and internal consistency was confirmed using Cronbach's Alpha ($\alpha = 0.942$). These quantitative indicators served as corroborative evidence for the qualitative findings, not as standalone measures.

The classroom observation instrument was developed based on the integration typology proposed by Fogarty (1991). The observation indicators included the following: (1) alignment of learning implementation with the Islamic-based integrative curriculum; (2) teachers' integration of scientific concepts with Qur'anic verses and Islamic values; (3) incorporation of tawhid, akhlaq, and religious attitudes into learning activities; (4) use of contextual, reflective, and bidirectional integrative instructional strategies; (5) teacher-student interactions that supported integrative learning; (6) students' engagement in integrative learning activities, including value-based discussions; (7) use of learning media and resources supporting the integration of Science and Islamic Religious Education; (8) implementation of ongoing assessment covering cognitive, affective, and spiritual dimensions; (9) the presence of a religious and conducive classroom environment; and (10) consistency between teachers' attitudes and behaviors as role models of Islamic values.

The interview indicators were developed based on Tyler (1949) curriculum development model and Fogarty (1991) integration typology. For the Principal (Policy and Vision), the indicators included school policies for developing an Islamic-based integrative curriculum, philosophical foundations and institutional vision, curriculum development mechanisms, and supporting and inhibiting factors. For the Vice Principal for Curriculum Affairs (Planning and Supervision), the indicators include the planning process of the integrated Science-Islamic Religious Education curriculum, integration of Islamic values into learning outcomes and teaching modules, integration models employed, teacher collaboration, and periodic evaluation systems. For the Science Teacher (Implementation and Strategies), the indicators included strategies for linking science content with Islamic values, approaches to integrating *ayat kauniyah* into instruction, and time and resource constraints. For the Islamic Religious Education Teacher (Collaboration and Values Reinforcement), the indicators included contributions to Qur'anic value reinforcement, bidirectional integration between

subjects, and cross-subject coordination. For the Grade VI Coordinator (Consistency and Coordination), the indicators included consistency of integrative lesson plan formats and collaborative evaluation practices. For the Vice Principal for Student Affairs (Character Development and Spiritual Evaluation), the indicators included development of students' religious character, mechanisms for monitoring spiritual attitudes beyond the classroom, and documentation of moral and character development (Tyler, 1949).

A student response questionnaire consisting of 20 Likert-scale items (1–4) was administered to 24 Grade VI students as a source of quantitative triangulation data. The questionnaire was developed based on Fogarty (1991) integration indicators and covers ten dimensions of integrative curriculum implementation: (1) learning implementation, assessed through alignment of instruction with the planned integrative module; (2) integration of Science and Islamic Religious Education, covering connections between science content and Qur'anic verses; (3) internalization of Islamic values, focusing on tawhid and moral character development; (4) instructional strategies, evaluating the engagement and effectiveness of integrative teaching methods; (5) classroom interaction, measuring dialogic and reflective teacher–student communication; (6) learning media and resources, assessing the availability of integrated reference materials; (7) process evaluation, covering assessment aligned with integrated content including spiritual dimensions; (8) religious school environment, assessing the conduciveness of the classroom for integrative practice; (9) teacher role modeling, examining whether teachers consistently demonstrate Islamic values; and (10) understanding of Islamic values, measuring students' enhanced spiritual awareness through science learning. Validity was confirmed using the Pearson product–moment correlation (r -calculated $>$ r -table = 0.388; α = 0.05), and internal consistency was established using Cronbach's Alpha (α = 0.942).

Data analysis followed the interactive model of (Miles et al., 2003), comprising three concurrent and iterative activities: (1) data condensation, involving the systematic reduction of raw data through first-cycle descriptive coding to capture manifest content and second-cycle pattern coding to identify themes such as 'institutional embedding of Islamic values,' 'contextual integration strategies,' and 'barriers to cross-disciplinary collaboration'; (2) data display organization into matrices, thematic categories, and conceptual maps; and (3) conclusion drawing and verification iterative interpretation against theoretical frameworks.

Trustworthiness was established through: (1) source triangulation cross-checking findings across participant roles; (2) technique triangulation by verifying interview data against observation notes and documents; (3) member checking returning interpretations to participants for verification; and (4) researcher reflexivity through the maintenance of a reflective (Lincoln & Guba, 1985a).

C. Result and Discussion

1. Curriculum Design From Institutional Mandate to Collaborative Planning

The design of the Islamic-based integrative curriculum at SDIT Al-Uswah Surabaya is characterized by its deliberate and institutionally embedded nature. Operating within the framework of the Kurikulum Merdeka, which emphasizes Learning Outcomes (*Capaian Pembelajaran*) rather than fixed Core Competencies (*Kompetensi Inti*), the school systematically integrated Islamic values into competency profiles and instructional module objectives from the earliest stages of curriculum development.

The design process began with a systematic content mapping of Grade VI Science content was analyzed to identify topics with potential for integration with Islamic Religious Education. Science teachers subsequently engaged in structured collaborative dialogue with Islamic Religious Education teachers to establish conceptually resonant linkages. As the Vice Principal for Curriculum (IST) confirmed, "Integration was designed from the outset of lesson plan development, not done spontaneously during teaching." The Principal (MN) further affirmed, "Islamic values are embedded in the learning objectives and form part of the competencies students must achieve."

One illustrative example is the Grade VI topic of pollination (*penyerbukan*), which is linked to QS. An-Nahl [16]:68–69, a Qur'anic passage describing bees and their benefits. This connection enriches ecological learning by incorporating the values of gratitude (*syukur*) and *tawhid*. Likewise, ecosystem balance is associated with QS. Al-Mulk [67]:3, which highlights the perfection of divine creation, while the study of human anatomy is connected to QS. Al-Mu'minun [23]:12–14. This instructional practice exemplifies Fogarty (1991) correlative integration model, in which subject-specific knowledge is explicitly correlated with religious texts and values. Furthermore, the curriculum incorporates spiritual attitude competencies across all subjects, including Science learning, and applies a standardized lesson plans format across all Grade VI classes to ensure consistency.

The involvement of all stakeholders in curriculum design reflects the Islamic principle of *musyawarah* (deliberation) as referenced in QS. Asy-Syura [42]:38. The Grade VI coordinator (NA) confirmed, "The integrative lesson plans uses a uniform format so that implementation is consistent across all Grade VI classes." This finding corroborates Dardiri & Su'aidi (2024) assertion that systematic knowledge integration, rather than the ad hoc insertion of Qur'anic references, is the hallmark of effective integrative Islamic curriculum.

Importantly, this curriculum design addresses a recurring limitation identified in previous studies, namely the tendency for integration to remain incidental and highly dependent on individual teachers (Pepilina, 2024). By

embedding Islamic integration within the official curriculum structure and competency framework of the Kurikulum Merdeka, SDIT Al-Uswah institutionalizes the practice, thereby promoting its sustainability beyond individual teacher initiatives. This institutional embedding resonates with (Mitchell & Tilley, 2025) argument that curriculum integration should be continuously led, supported, and sustained. Overall, the integrative curriculum at SDIT Al-Uswah reflects a holistic value-based curriculum philosophy, in which Islamic epistemology serves as the guiding framework for instructional planning.

Curriculum Design: From Institutional Mandate to Collaborative Planning

The analysis of curriculum documents, cross-informant interview data, and classroom observations revealed three mutually reinforcing patterns. First, the integrative curriculum design at SDIT Al-Uswah was institutional rather than incidental. The integration of Islamic values into Learning Outcomes and Learning Objectives had been formally established in official school documents, including the Integrative Curriculum Decree No. 030/INT/SDITAU/VII/2025, and implemented within the framework of the Kurikulum Merdeka. Second, the curriculum design process was collaborative and bidirectional. Science and Islamic Religious Education (IRE) teachers jointly conducted content mapping and identified conceptual connections before developing instructional modules. Third, the standardized format of integrative lesson plans across all Grade VI classes ensured consistency in implementation across teachers and classrooms.

These findings are consistent with the proposition of Dardiri & Su'aidi (2024) that systematic integration, rather than the ad hoc inclusion of Qur'anic verses, constitutes a defining characteristic of an effective Islamic integrative curriculum. Furthermore, the findings align with of Mitchell & Tilley (2025), argument that sustainable curriculum integration requires continuous leadership, shared curriculum ownership, and effective cross-departmental governance mechanisms.

Cross-informant interview analysis yielded six thematic findings corresponding to the six informant roles. The Principal (MN) emphasized institutional commitment, affirming that Islamic values are formally embedded within the school's learning objectives and competency framework integration is a structured institutional policy, not merely an individual teacher initiative. This aligns with Tyler's (1949) principle of grounding curriculum rationale in an explicit institutional vision. The Vice Principal for Curriculum Affairs (IST) highlighted systematic planning, explaining that Science-Islamic Religious Education integration is designed at the initial stage of instructional planning and that academic supervision ensures the integration operates bidirectionally consistent with Fogarty (1991) correlated integration model. The Grade VI Science Teacher (RDA) acknowledged time management challenges, noting that embedding Islamic values requires additional time for reflection and cross-disciplinary discussion

within a constrained timetable, a constraint documented by (Hosaini et al., 2024) in comparable implementation contexts. The PAI Teacher (AFA) described a bidirectional integration pattern, actively contributing relevant Qur'anic verses and Islamic values aligned with Science topics, ensuring cross-curricular connections flow in both directions consonant with the integrated curriculum design proposed by (Drake & Burns, 2004). The Grade VI Coordinator (NA) noted that standardized lesson plan formats across all Grade VI classes promote consistency of implementation and reduce reliance on individual teacher initiative, a finding that mirrors (Mitchell & Tilley, 2025) identification of standardization as essential for curriculum sustainability. The Vice Principal for Student Affairs (SK) identified spiritual evaluation specifically observable changes in students' religious behavior such as prayer discipline and responsiveness during value reflection as the primary indicator of curriculum integration success beyond academic measures, reflecting (Lincoln & Guba, 1985b) naturalistic approach to authentic behavioral assessment.

2. Implementation Contextual, Reflective, and Bidirectional Integration

The implementation of the integrative curriculum in Grade VI Science and Islamic Religious Education classes was characterized by three defining features: contextuality, reflectivity, and bidirectionality. The findings also reflect Johnson (2002) concept of contextual teaching, in which scientific phenomena are connected with their theological and ethical dimensions. Furthermore, reflective learning activities, such as post-lesson value reflections and student reflection journals, promote the internalization of integrated content rather than merely exposing students to it.

The bidirectionality of integration is pedagogically significant and distinguishes the SDIT Al-Uswah approach from predominantly unidirectional *"science first, religion-added"* models documented in earlier studies (Prasetyo et al., 2025). As the Science Learning teacher (AFA) explained, "We are involved in providing input related to Qur'anic verses and Islamic values relevant to the science material." This collaborative engagement indicates that integration operates in both directions: scientific concepts deepen students' understanding of Qur'anic teachings, while Qur'anic values enrich the ethical and spiritual dimensions of scientific inquiry. The vice principal for curriculum further confirmed that, "integration runs in both directions not only from Science Learning to Islamic Religious Education, but also the reverse."

In Science classes, the apperception stage linked real-life natural phenomena with religious meaning. For example, the water cycle was associated with QS. Al-Anbiya' [21]:30, which affirms that all life originates from water, whereas the study of the solar system and ecosystem balance was connected to QS. Al-Mulk [67]:3, emphasizing the perfection of divine creation. In Islamic Religious Education

classes, teachers reinforced and deepened the same Qur'anic connections previously introduced in Science lessons, thereby creating coherent cross-curricular learning experiences. Multiple instructional methods were employed throughout the lessons, including group discussions, simple experiments, environmental observations, and value reflections, all implemented within a contextual teaching and learning framework aligned with QS. Ali Imran [3]:190–191.

Implementation: Contextual, Reflective, and Bidirectional Integration

The thematic coding of observation notes from eight learning sessions and interview data from six informants revealed three categories of implementation findings. First, the integration was contextual, as science teachers consistently linked scientific phenomena to relevant Qur'anic verses during the introductory phase of instruction. For example, the water cycle was associated with QS. Al-Anbiya' [21]:30, whereas ecosystem balance was connected to QS. Al-Mulk [67]:3. Second, the integration was reflective, with each learning session concluding with a written values reflection designed to promote spiritual internalization beyond conceptual understanding. Third, the integration was bidirectional. Islamic Religious Education teachers actively reinforced the Qur'anic connections introduced in Science classes, while Science teachers strengthened the scientific dimensions of the values discussed in Islamic Religious Education lesson (Prasetyo et al., 2025).

Systematic analysis of eight classroom observation sessions revealed a coherent and consistent pattern of integrative implementation. Across all observed lessons, instruction proceeded through three discernible stages: phenomenon-based apperception, core integrative activities, and values reflection at the session's close confirming alignment between planning documents and enacted teaching. The correlative integration model Fogarty (1991) was evident throughout, as Science teachers consistently introduced Qur'anic connections during the apperception phase; for example, the water cycle was linked to QS. Al-Anbiya' [21]:30 and ecosystem balance to QS. Al-Mulk [67]:3. The internalization of Islamic values particularly tawhid, gratitude (*syukur*), and scientific responsibility was cultivated through reflective questioning, with teachers encouraging students to perceive natural phenomena as signs of Allah's greatness. Instructional methods were diversified across sessions, encompassing group discussions, simple experiments, environmental observations, and structured value reflections within a contextual teaching and learning framework (Johnson, 2002). Teacher student interactions were dialogic and reflective, with students demonstrating active engagement especially during discussions of Qur'anic meanings indicating a genuinely bidirectional flow of integration (Rahman & Mulyana, 2024). Learning resources included integrative teaching modules and visual media depicting

natural phenomena; the limited availability of dedicated integrated reference materials was identified as a recurring constraint, consistent with the inhibiting factors reported by teachers in interviews (Parmin & Savitri, 2022). Process evaluation was ongoing, involving oral questioning, written reflection sheets, and verbal feedback, with spiritual dimensions assessed through the quality of students' value reflections. The classroom environment consistently reflected an Islamic school culture, commencing each session with prayer and Qur'anic recitation and concluding with value reflection, while teachers modeled Islamic conduct in their speech and demeanor throughout instruction (Kusumawati et al., 2023).

The student questionnaire data corroborated the effectiveness of the implementation. Among the 24 Grade VI students, the majority selected "Agree" or "Strongly Agree" across all 20 questionnaire items, indicating that the integrated lessons increased their sense of gratitude (*syukur*) to Allah, that the classroom environment was conducive to religious and disciplined learning, and that teachers effectively demonstrated the relationship between scientific knowledge and Islamic values. These quantitative indicators, although modest in scale, provided empirical support of qualitative findings regarding students' positive perceptions of the integrative approach.

Students' Perceptions of the Implementation: Questionnaire Results

Descriptive analysis of the 20-item questionnaire items administered to 24 grade VI students showed that, across all 10 implementation dimensions, the combined percentage of respondents selecting strongly agree (SA) and agree (A) exceeded 88%, with an average of 92.5%. The highest levels of agreement were observed in the dimensions of Internalization of Islamic Values (SA = 75%) and Religious Environment (SA = 67%), indicating that students perceived the integrative curriculum as particularly effective in the affective and spiritual domains. In contrast, the Learning Media and Resources dimension exhibited the highest proportion of Neutral (N) responses (8%), which was consistent with the interview findings identifying the limited availability of integrated reference materials as a constraining factor.

Descriptive analysis of the 20-item questionnaire administered to 24 Grade VI students revealed consistently high levels of agreement across all ten implementation dimensions. The combined Strongly Agree (SA) and Agree (A) response rate averaged 92.5% across all dimensions, indicating an overall positive student perception of the integrative curriculum. The dimension of Internalization of Islamic Values recorded the highest proportion of Strongly Agree responses (SA = 75%; A = 21%; Neutral = 4%), demonstrating that students strongly perceived the embedding of tawhid and moral character values within the learning process. Similarly, the Religious School Environment dimension yielded high Strongly

Agree responses (SA = 67%; A = 29%; Neutral = 4%), confirming that students found the classroom atmosphere highly conducive to integrative Islamic learning. Teacher Role Modeling also received favorable ratings (SA = 63%; A = 29%; Neutral = 8%), indicating that teachers' demonstration of Islamic values effectively influenced students' religious attitudes. Learning Interaction (SA = 62%; A = 33%; Neutral = 4%) and Understanding of Islamic Values (SA = 58%; A = 33%; Neutral = 8%) reflected students' positive experience of dialogic and reflective classroom engagement. For Learning Implementation and Integration of Science and PAI, SA responses ranged from 54%–58%, with Agree responses at 33%–38%, suggesting solid but somewhat more variable perceptions across classrooms. The Learning Media and Resources dimension showed the highest neutral response rate (SA = 46%; A = 46%; Neutral = 8%), consistent with interview findings identifying the limited availability of integrated reference materials as a persistent constraint. Process Evaluation (SA = 50%; A = 42%; Neutral = 8%) indicated that students generally perceived the assessment process as appropriate, though the spiritual dimension of evaluation requires further development. These quantitative findings triangulate and corroborate the qualitative data from interviews and classroom observations, particularly reinforcing the conclusion that the integrative curriculum was most effectively enacted in the affective and spiritual domains.

This pattern of student responses served as a form of methodological triangulation, confirming the findings derived from the interview and classroom observation data. Specifically, students perceived the implementation of the integrative curriculum positively, particularly with regard to the internalization of spiritual values, the application of contextual learning strategies, and the creation of a religious learning environment. These findings are consistent with those reported by Hosaini et al (2024), who documented that innovative instructional strategies in Islamic Religious Education significantly enhance student engagement.

This methodological diversity is also consistent with the findings of Hosaini et al (2024), who reported that innovative instructional strategies, including inquiry-based and project-based learning, significantly enhance student engagement in Islamic educational contexts. Furthermore, these findings align with the arguments of Drake & Burns (2004) and Fogarty (1991), who emphasized that integrative curricula require diverse pedagogical approaches to maintain conceptual coherence across disciplines.

3. Supporting and Inhibiting Factors

Four enabling factors were identified as critical to the sustainability of the integrative curriculum at SDIT Al-Uswah: (1) strong institutional commitment, formalized through the integration of Islamic values into learning competency

documents, accreditation processes, and the school's leadership vision; (2) systematic teacher collaboration through regular cross-disciplinary planning between Science and Islamic Religious Education teachers; (3) standardized instructional documentation (a shared lesson plans format), which ensured consistent implementation across all Grade VI classes; and (4) a pervasive religious school culture, including daily Qur'anic recitation, prayers before and after lessons, and value reflection activities that reinforced curriculum integration beyond formal classroom instruction (Basri & Abdullah, 2024).

These enabling factors correspond closely to those identified in the international literature on curriculum reform. Mitchell & Tilley (2025), reflecting on a decade of integrated engineering curriculum reform at UCL, found that cross-departmental governance structures, shared curriculum ownership, and sustained faculty development were indispensable for maintaining integration. Within the Islamic school context, institutional commitment and a strong religious culture perform comparable functions by sustaining the momentum of curriculum integration beyond the initial stages of reform (Basyit, 2020).

Three primary inhibiting factors were identified. First, time constraints represented the most significant challenge. Embedding spiritual reflection and cross-disciplinary discussions required additional instructional time within an already limited timetable. As the science teacher (RDA) acknowledged: 'Integrating Islamic values requires extra time for reflection and discussion, making time management a distinct challenge.' Second, resource scarcity including the limited availability of integrative learning materials, Qur'an–science reference books, and cross-disciplinary teaching guides constrained teachers' pedagogical creativity. Third, uneven cross-disciplinary readiness among teachers created inconsistencies. While Islamic Religious Education teachers demonstrated strong competence in Qur'anic interpretation, their scientific literacy varied. Conversely, Science teachers sometimes lacked sufficient theological knowledge to establish appropriate Qur'anic connections confidently.

These inhibiting factors are consistent with those documented in the broader literature on integrative curricula. Hosaini et al (2024) noted that insufficient teacher training for innovative methods and limited facilities constrained integrative learning in vocational Islamic education settings findings paralleled here. Internationally, Mitchell & Tilley (2025) observed that 'small-scale or isolated pockets of change can only go so far and may amplify the disconnect between active and passive elements of the curriculum' a warning relevant to any school where integration remains partially implemented. The school's mitigation strategies including regular evaluation meetings, academic supervision, internal professional development, and the gradual development of spiritual assessment instruments reflect an institutional awareness of these structural challenges (Wang

et al., 2023). However, their long-term effectiveness requires further longitudinal evaluation.

4. Evaluation of the Integrative Curriculum

The evaluation framework implemented at SDIT Al-Uswah Surabaya represents a distinctive contribution to the assessment of Islamic integrative curricula. Drawing upon (Stufflebeam & Coryn, 2014) CIPP (Context, Input, Process, Product) evaluation model, the school expanded the framework by incorporating a fourth evaluation domain, namely spiritual development. This extension is consistent with the Islamic educational principle that beneficial knowledge (*'ilm nafi'*) should be reflected in righteous action (*amal salih*).

On the cognitive dimension, written tests, quizzes, and project assignments measure scientific concept mastery and students' ability to articulate connections between IPA content and Islamic values grounded in QS. Az-Zumar [39]:9, which affirms the elevated status of those who combine knowledge with spiritual consciousness. On the affective dimension, teacher observations and written student reflections assess religious attitudes and moral conduct during learning; as the vice principal for student affairs (SK) stated, changes in students' religious behavior serve as 'the primary indicator of integration success.' On the psychomotor dimension, experimental skills are assessed with criteria explicitly including Islamic ethics of *amanah* (trustworthiness) and scientific precision.

Within the cognitive domain, written examinations, quizzes, and project assignments assessed students' mastery of scientific concepts as well as their ability to explain the relationship between science content and Islamic values grounded in QS. Az-Zumar [39]:9. Within the affective domain, teachers used classroom observations and students' written reflections to assess religious attitudes and moral behaviour during learning. As the vice principal for student affairs (SK) stated, changes in students' religious behaviour served as "the primary indicator of integration success." Within the psychomotor domain, students' experimental skills were evaluated using criteria that explicitly incorporated the Islamic values of *amanah* (trustworthiness) and scientific accuracy.

Monitoring and follow-up activities were conducted regularly through academic supervision and Grade VI coordination meetings. When evaluation results indicated gaps in students' conceptual understanding or spiritual development, teachers provided follow-up support through reinforced reflection activities and additional thematic discussions of relevant Qur'anic passages. This approach is consistent with (Al-Ghifary et al., 2024) finding that CIPP-based evaluation in Islamic primary schools must address spiritual outcomes alongside academic ones, and resonates with (Nuryanti & Dahlan, 2024) observation that affective and psychomotor measurement in Islamic curriculum evaluation remains

challenging and requires deep qualitative competency from teachers.

A critical limitation should be acknowledged. The instruments used to evaluate students' spiritual attitudes are still under development. The vice principal for curriculum also noted that these instruments require further refinement to produce more structured and measurable outcomes. This limitation reflects the broader challenge of operationalizing indicators of spiritual development in empirically rigorous ways. Consequently, future studies should focus on developing validated instruments and conducting longitudinal evaluations of spiritual outcomes. Overall, the evaluation framework at SDIT Al-Uswah provides a contextually grounded and theoretically informed model for holistic assessment within faith-integrated curricula.

D. Conclusion

This study provides a comprehensive and empirically grounded account of the development of an Islamic-based integrative curriculum at SDIT Al-Uswah Surabaya by addressing a gap in the literature through an examination of the complete curriculum development cycle, including curriculum design, implementation, enabling and inhibiting factors, and evaluation across both Science Learning and Islamic Religious Education within a single institutional context. The findings indicate that the curriculum was systematically designed through collaborative institutional planning rather than relying solely on individual teacher initiatives, with *tawhid* and moral values formally embedded within the Kurikulum Merdeka-aligned competency framework. Curriculum implementation employed contextual, bidirectional, and reflective integration strategies that meaningfully connected Science Learning content with Qur'anic values, supported by diverse instructional approaches and positive student responses. Furthermore, institutional commitment, teacher collaboration, and a strong religious school culture were identified as key enabling factors that supported curriculum sustainability. In contrast, time constraints, limited resources, and variations in teacher readiness emerged as the primary inhibiting factors, requiring targeted institutional support through professional development and the provision of integrative learning resources. In addition, the holistic evaluation framework, encompassing cognitive, affective, psychomotor, and spiritual dimensions, extends the CIPP evaluation model by incorporating spiritual outcomes into curriculum assessment.

The theoretical contribution of this study lies in its empirical specification of the institutional conditions that support the sustainability of Islamic-based curriculum integration, shifting the focus from individual teacher creativity toward systemic curriculum development. The practical contribution is the documentation of an integrative curriculum model grounded in a specific institutional context that may be adapted by other integrated Islamic schools implementing the Kurikulum

Merdeka according to their respective contexts. Nevertheless, the findings should be interpreted in light of the study's single-case design, which limits direct generalizability. Accordingly, the proposed model should be viewed as transferable in principle rather than universally applicable.

Three directions for future research are recommended. First, comparative case studies across multiple integrated Islamic schools are needed to identify contextual variations and common principles of curriculum integration. Second, longitudinal studies should examine graduates' religious character development and academic outcomes to evaluate the long-term impact of integrative curricula. Third, future research should focus on developing and validating instruments for assessing students' spiritual attitudes to enable more rigorous and standardized evaluation of the spiritual dimension identified in this study.

E. Acknowledgement

The authors extend sincere gratitude to the academic supervisors, all participants and staff at SDIT Al-Uswah Surabaya, and Universitas Islam Negeri Sunan Ampel Surabaya for their support and facilitation of this research

F. Contributors

UI was responsible for the research design, data collection, data analysis, and manuscript preparation. N contributed to academic supervision and manuscript revision. AWY contributed to the theoretical framework and conceptual development.

G. References

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