Integrating Shaykh Yusuf al-Makassari's Ethical and Spiritual Teachings into Modern Character-Based STEAM Curricula

Tracing the Intellectual Legacy of Nusantara Ulama for Sustainable Civilization and Global Wisdom

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Abstract. Shaykh Yusuf al-Makassari (1626–1699) was a major seventeenth-century Nusantara scholar, Sufi teacher, intellectual, and anti-colonial figure whose writings connect knowledge, spiritual discipline, ethical conduct, remembrance of God, and responsible action. His legacy is especially relevant to contemporary education because STEAM—Science, Technology, Engineering, Arts, and Mathematics—has become an important response to complex social, technological, and environmental problems. In contrast, many education systems still struggle to connect technical competence with character and ethical responsibility. This article asks three questions: (1) What ethical and spiritual principles can be identified from Shaykh Yusuf's primary writings? (2) How do these principles relate to Qur'anic guidance, Prophetic Sunnah, and current research on STEAM and character education? and (3) How can they be translated into a practical character-based STEAM curriculum without reducing Sufi teachings to generic "values"? The study uses qualitative textual analysis of selected primary writings attributed to Shaykh Yusuf, especially Zubdat al-Asrar, Shurut al-'Arif al-Muhaqqiq, Taj al-Asrar, and Matalib al-Salikin. It works on dhikr, together with thematic analysis of the Qur'an, authentic hadith, and recent educational literature. The paper proposes a Yusufian Ethical-Spiritual STEAM Framework in which tawhid and *niyyah* provide the worldview and purpose; *adab*, *amanah*, sabr, *tawakkul*, *rahmah*, justice, humility, and service provide character aims; and inquiry, design, artistic expression, mathematical reasoning, and technological practice provide the learning means. The proposed model is expected to strengthen ethical reasoning, intellectual humility, collaboration, responsible innovation, environmental care, and social usefulness. Rather than claiming to test causal effects, the paper offers a research-grounded curriculum model and an assessment framework for future empirical studies in Islamic schools, pesantren, madrasah, and universities.

Keywords: Shaykh Yusuf al-Makassari; STEAM education; character education; Islamic education; Sufism; akhlaq; ethics; Prophetic pedagogy; curriculum; sustainable civilization

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1 Introduction

Shaykh Yusuf al-Makassari stands at a distinctive meeting point between Nusantara Islam, Sufi spirituality, intellectual travel, social leadership, and resistance to colonial domination. Born in the Gowa-Makassar region in the seventeenth century, he received early Qur'anic and Islamic education. He later traveled to important centers of Islamic learning, including Banten, Aceh, India, Yemen, the Hijaz, and Damascus. His intellectual formation was therefore not narrow or local. It was shaped by movement across languages, teachers, scholarly traditions, and societies. Modern scholarship describes him as a Sufi, an intellectual, and a statesman who connected spiritual learning with social responsibility. He later became an important teacher in Banten, resisted Dutch expansion, was exiled to Ceylon and finally to the Cape, where he continued teaching and writing until his death in 1699 [1].

The importance of Shaykh Yusuf to contemporary education lies not simply in his being a famous scholar. His importance lies in the way his writings present knowledge as something that should transform the person who possesses it. In the selected writings translated in Spiritual Path, Spiritual Reality, he repeatedly addresses the spiritual wayfarer as a learner whose knowledge must be accompanied by discipline, remembrance, humility, correct conduct, and action. The opening of *Zubdat al-Asrar* presents the work as a benefit for the salik, the traveler on the path, and immediately links learning with transformation: the learner is not only collecting information but seeking understanding of God and purification of the self. In *Shurut al-'Arif al-Muhaqqiq*, Shaykh Yusuf stresses the danger of a gap between what a person says and what a person does. In Taj al-Asrar, he describes the straight path through the relationship between outward law and the inward spiritual path. These themes are directly relevant to character education [2].

This matters because modern STEAM education has become increasingly concerned with interdisciplinary learning, creativity, design, technology, real-world problem solving, and preparation for uncertain futures. Recent research shows strong interest in STEAM as a way of developing creativity and interdisciplinary thinking, but it also identifies practical problems: teachers may lack interdisciplinary preparation, assessment remains difficult, and the integration of disciplines can become superficial. A systematic review of STEAM in primary schools found that the arts can support creativity and new ways of thinking, while also noting a lack of clear empirical guidance for curriculum content and assessment. Research on emerging technologies in STEAM similarly highlights the need to prepare learners for a rapidly changing digital society. Current scholarship in engineering education has also renewed attention to virtues, character, and embedded ethics [3].

The central problem, therefore, is not that modern curricula lack knowledge. The deeper problem is that technical knowledge can become separated from moral purpose. A student may learn how to build an algorithm without asking whether it is fair; design a water system without asking who receives the benefit; produce an efficient product without considering waste; use artificial intelligence without reflecting on truth, privacy, or human dignity; or create persuasive media without asking whether the message

harms people. The educational question is thus: What kind of person should use knowledge, and for what purpose?

The Qur'an places knowledge, reflection, and moral responsibility together. The first revealed verses begin with reading and learning in the name of the Lord (Qur'an 96:15). The Qur'an also asks whether those who know can be equal to those who do not know (39:9). It describes the raising of people who possess faith and knowledge (58:11). Knowledge is therefore not presented as value-neutral accumulation. It is connected to responsibility before God and responsibility toward creation [4].

The Prophetic model gives this principle practical form. The well-known Hadith of Jibril presents Islam, *iman*, and *ihsan* as an integrated structure of religion; *ihsan* means worshipping God with a consciousness that He sees the worshipper (Sahih Muslim 8a). The Prophet also taught that actions are judged by intentions (Sahih al-Bukhari 1), that the strong believer should seek what benefits him while seeking Allah's help (Sahih Muslim 2664), and that a believer should speak good or remain silent and should not harm the neighbor (Sahih al-Bukhari 6018). These teachings offer a rich ethical basis for education: intention, competence, self-control, beneficial action, communication, and social responsibility [2].

Shaykh Yusuf's thought can therefore help answer a contemporary curriculum problem. He does not give us a modern STEAM syllabus, of course. It would be historically inaccurate to claim that he anticipated robotics, coding, or contemporary engineering. The purpose of this paper is different: to recover the ethical and spiritual architecture of his writings and translate that architecture into a modern curriculum model. The proposed integration is interpretive and pedagogical, not a claim of historical prediction.

2 Literature Review

2.1 Research on Shaykh Yusuf's ethical and spiritual thought

Scholarship on Shaykh Yusuf has traditionally focused on his biography, Sufi thought, manuscripts, networks of Islamic learning, and political resistance. Nabilah Lubis's foundational work presents him as a Sufi, intellectual, and statesman whose writings dealt with mysticism, Sufi orders, and ethics [1]. A recent bio-bibliographical study by Syamsuddin Arif revisits the manuscript tradition and the doctrinal content of his writings, emphasizing that his corpus contains a substantial intellectual program rather than isolated devotional statements. The 2023 Routledge/UNISA Press volume Spiritual Path, Spiritual Reality is especially important for the present study because it provides accessible English translations of selected Arabic texts and reproduces their manuscript bases. The volume includes *Zubdat al-Asrar*, *Shurut al-'Arif al-Muhaqqiq*, Taj al-Asrar, Matalib al-Salikin, Sirr al-Asrar, and several writings on dhikr [5].

Existing studies of Shaykh Yusuf's ethics commonly identify good character, spiritual discipline, tawhid, remembrance, sincerity, and social responsibility as central. A 2024 study classifies his ethical thought as a form of religious ethics because it draws together Qur'an and Hadith, theology, philosophy, and Sufism. This is significant for curriculum design: his ethics are not a list of isolated virtues. They arise from a

worldview in which knowledge of God, purification of the self, correct conduct, and action belong together.

2.2 STEAM, creativity, and interdisciplinary learning

Modern STEAM research generally treats the integration of the arts into STEM as more than just adding an art lesson to a science project. The arts can create new forms of representation, imagination, communication, and design. A 2024 systematic review of STEAM in primary schools found that STEAM research increasingly uses project- and inquiry-based, interdisciplinary approaches, while also reporting gaps in guidance on content and assessment. A 2023 systematic review of emerging technologies in STEAM found a growing connection between STEAM and the use of digital and emerging technologies. Other reviews identify creativity as one of the strongest educational reasons for the arts component.

The evidence is also consistent with wider changes in the skills expected of graduates. The World Economic Forum's Future of Jobs Report 2025 identifies analytical thinking, resilience, leadership, creative thinking, technological literacy, empathy, curiosity, and systems thinking among important core skills. The OECD's PISA 2022 creative-thinking assessment similarly defines creativity as the capacity to generate diverse and original ideas and to evaluate and improve them. These trends strengthen the case for an interdisciplinary curriculum, but they do not by themselves answer the ethical question of how those skills should be used [6].

2.3 Character and ethics in STEM and engineering education

Recent engineering-education research is increasingly explicit that ethics should not be an optional add-on. Ferdman and Ratti argue for attention to embedded ethics, morality, and politics in engineering education [6]. Research presented through the American Society for Engineering Education has examined virtue ethics and character development in engineering classrooms. A 2024 study on engineering virtue argues for behavioral approaches to ethical challenges, while another investigation of professional engineering codes identified responsibility, integrity, honesty, trustworthiness, teamwork, and fairness as prominent virtues.

This literature supports the main argument of this paper: technical education needs a model of the person, not only a model of technical performance. However, much of the contemporary literature is built around secular professional ethics. It can identify virtues, but it does not necessarily provide a metaphysical account of why virtues matter, how intention relates to action, or how spiritual consciousness should shape technical work.

2.4 Islamic education and character formation

Recent Indonesian scholarship also shows growing interest in integrating character and Islamic education. Studies of Islamic schools emphasize habituation, *akhlaq*, honesty,

responsibility, and integrity. Research on Living Values Education in Indonesian Islamic schools demonstrates the continuing search for explicit and practical models of character formation. A 2024 article on humanizing STEM-based learning for Islamic education argues that STEM should contribute to a more human-centered educational transformation [7].

Yet there remains a clear research gap. Islamic education literature often discusses character development, while STEAM literature often discusses creativity and interdisciplinary problem solving. Studies on Shaykh Yusuf often discuss Sufism and ethics. What is missing is a structured model that brings these three areas together through the primary writings of a Nusantara scholar and then shows how the values can shape actual STEAM learning activities and assessment.

This article contributes in four ways. First, it treats Shaykh Yusuf's own writings as a primary ethical source rather than using him only as a historical symbol. Second, it places his ethical-spiritual ideas in direct conversation with the Qur'an, authentic Hadith, and Prophetic pedagogy. Third, it translates the resulting values into the design of modern STEAM learning rather than simply adding an Islamic-values paragraph to a conventional STEM curriculum. Fourth, it proposes an assessment structure in which character is observed through intentions, processes, decisions, teamwork, reflection, and social impact.

The contribution is therefore a bridge: from Nusantara intellectual heritage to contemporary curriculum design.

The study addresses three research questions:

1. RQ1. What ethical and spiritual principles relevant to character formation can be identified in Shaykh Yusuf al-Makassari's primary writings?
2. RQ2. How do these principles correspond with Qur'anic teachings, authentic Prophetic Hadith, and contemporary research on STEAM, character, and ethics?
3. RQ3. How can these principles be transformed into a practical character-based STEAM curriculum framework for contemporary Muslim educational settings?

3 Methods

The study uses qualitative document analysis. Primary sources are the selected writings of Shaykh Yusuf translated from Arabic manuscripts in Spiritual Path, Spiritual Reality: Selected Writings of Shaykh Yusuf of Macassar, edited by Yousuf Dadoo and Auwais Rafudeen. Particular attention is given to Zubdat al-Asrar (pp. 46–69), Shurut al-'Arif al-Muhaqqiq (pp. 81–86), Taj al-Asrar (pp. 87–96), Matalib al-Salikin (pp. 101–105), Sirr al-Asrar (pp. 106–119), Kayfiyyat al-Dhikr (pp. 124–125), and related texts on remembrance and spiritual discipline [2].

The Qur'an and Sahih Hadith are used as normative sources. Hadith selection is intentionally conservative: the framework relies mainly on narrations in Sahih al-Bukhari and Sahih Muslim, with exact hadith numbers provided. Secondary sources include recent peer-reviewed literature on STEAM, character education, engineering ethics, Islamic education and creativity, as well as major works on Shaykh Yusuf.

The analysis followed four stages. First, passages were read for recurring concepts such as knowledge, intention, remembrance, *adab*, good character, self-discipline, humility, service, and responsible action. Second, these concepts were compared with Qur'anic and Prophetic principles. Third, the concepts were mapped against the learning functions of Science, Technology, Engineering, Arts, and Mathematics. Fourth, a curriculum framework was developed and conceptually tested against three criteria: theological fidelity, educational practicality, and interdisciplinary coherence.

This is a conceptual curriculum study, not an intervention study. Therefore, the outcomes proposed later in the paper are expected or testable outcomes, not claims that the model has already produced statistically significant effects.

4 Results

4.1 Shaykh Yusuf's Ethical-Spiritual Educational Vision

4.1.1 Knowledge Begins with Orientation, not Information

The first educational principle in Shaykh Yusuf's writings is that knowledge has a direction. Zubdat al-Asrar begins by addressing the seeker and presenting the text as a means of benefit for the traveler on the spiritual path. The point is important for modern curriculum theory. Learning is not simply "knowing more"; it is moving toward a better condition of the self and a more truthful relationship with God and creation.

The Qur'an's first revelation begins with "Read" and immediately connects reading to the Lord who created and taught by the pen (96:1–5). The Prophetic tradition also begins the ethical life of action with intention: "The reward of deeds depends upon the intentions" (Sahih al-Bukhari 1). In curriculum terms, this suggests that a project should begin not only with a learning outcome but with a meaningful question: Why are we doing this work? Whom can it benefit? And what responsibilities come with it?

4.1.2 Adab and Akhlaq are not Separate from Knowledge

Shaykh Yusuf's writings repeatedly place spiritual progress alongside ethical conduct. His discussion of the verified gnostic warns against claiming knowledge without corresponding action. In the same text, remembrance, turning toward the Hereafter, removing obstacles to the soul, and service are associated with the life of the seeker. This is especially important for character-based STEAM because technical competence can be measured more easily than moral quality.

The Prophetic example provides the clearest model. Aisha described the character of the Prophet as the Qur'an (Sahih Muslim 746). This means that revelation was not only recited but also embodied. In educational terms, the teacher and student should therefore ask not merely, "Can I explain the ethical principle?" but "Can my behaviour show that I have learned it?" [8]

4.1.3 Ihsan and Quality of Work

The Hadith of Jibril defines *ihsan* as worshipping Allah as though one sees Him, while knowing that He sees the worshipper (Sahih Muslim 8a). Ihsan has direct educational

implications. It creates an internal quality-control system. A student should not produce careful work only because a teacher is watching. The student should strive for excellence because work is an Amanah [8].

This principle can be applied to laboratory safety, accurate data recording, honest citation, software testing, mathematical calculation, engineering tolerances, artistic integrity, and responsible use of artificial intelligence. Ihsan does not mean perfection in the technical sense. It means serious effort, honesty, care, and awareness of accountability.

4.1.4 Sabr, *Tawakkul*, and Resilience

Sabr is often translated as patience, but in educational practice, it also includes disciplined perseverance. Tawakkul is not passive waiting; it is reliance upon Allah while taking responsible means. The Prophetic hadith "cherish that which gives you benefit and seek help from Allah, and do not lose heart" (Sahih Muslim 2664) provides a strong foundation for resilient learning [8].

This matters in STEAM because design projects fail. Experiments produce unexpected results. The code contains errors. Mathematical models need revision. Artistic prototypes may not communicate the intended meaning. A character-based curriculum should teach students to interpret failure as information and correction rather than as humiliation. The student learns to revise without losing hope and to succeed without becoming arrogant.

4.1.5 Dhikr, Reflection, and Metacognition

Shaykh Yusuf gives dhikr a central place in spiritual discipline. His writings on the virtues and methods of remembrance show that dhikr involves *adab*, preparation, attention, and continuity. In a curriculum, this should not be reduced to inserting a religious phrase before a lesson. A deeper application is reflective practice [2].

A STEAM lesson can include moments of quiet reflection, intention-setting, gratitude, self-evaluation, and ethical review. In this way, dhikr is understood in its spiritual sense, while reflection serves as a pedagogical bridge. Students can ask, "What did I learn?" What assumption did I make? Who might be affected by this design? Did I work honestly? Did I listen to my team? What should I change?

4.1.6 Tawhid and Intellectual Integration

A key feature of Shaykh Yusuf's thought is the refusal to separate outward practice from inward reality. In Taj al-Asrar, he describes the correct path as outwardly connected to Shariah and inwardly connected to the spiritual path. This can inform an Islamic approach to interdisciplinary education: science, technology, engineering, arts, and mathematics do not have to be taught as isolated islands [2].

Tawhid provides an integrating worldview. It does not mean that scientific claims should be replaced by religious statements. Rather, it means that knowledge is understood within a larger moral and theological horizon. Science investigates creation; engineering designs solutions; mathematics gives structure; technology extends human

capacity; art shapes meaning and communication. None of these should be used to deny responsibility before God or harm creation.

4.2 The Yusufian Ethical-Spiritual STEAM Framework

The framework proposed here consists of three interconnected layers. Layer 1, worldview and intention, encompasses tawhid, *niyyah*, *ihsan*, and *amanah*, which establish why knowledge is sought and how it should be used. Layer 2, character dispositions, includes *adab*, honesty, humility, sabr, *tawakkul*, *rahmah*, justice, responsibility, curiosity, and service, which shape learners' behavior throughout the learning process. Layer 3, STEAM practices, involves inquiry, experimentation, computation, design, making, artistic communication, modeling, collaboration, and problem solving, providing the practical learning environment in which these character dispositions are exercised. This structure avoids two common mistakes. The first is "religious decoration," where Qur'anic verses are added to an otherwise unchanged STEM lesson. The second is "technical isolation," where values are discussed in a separate moral-education class but not applied when students actually design, calculate, build, and decide.

The framework can be summarized through a six-stage project cycle [2]:

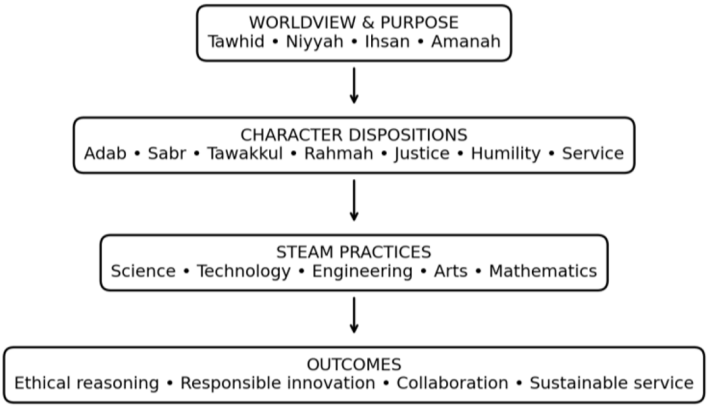


Fig. 1. Conceptual structure of the Yusufian Ethical-Spiritual STEAM Framework.

The proposed learning process consists of six interconnected stages. Niyyah involves identifying the problem and clarifying the intended benefit. Su'al requires learners to ask serious questions and distinguish evidence from assumptions. Tafakkur encourages careful study of creation, data, people, and context. Tasamum focuses on designing, modeling, calculating, coding, creating, and testing possible solutions. Amal involves implementing the solution responsibly and collaboratively. Finally, Muhasabah requires learners to evaluate the technical quality, ethical impact, character development, and social benefit of their work. These Arabic labels are not intended to replace standard design-thinking or engineering terminology; rather, they provide a spiritual and ethical orientation to familiar learning processes.

4.3 Curriculum Applications

4.3.1 Science: Studying Creation with Responsibility

Science lessons can connect observation with responsibility. A unit on ecosystems, for example, can investigate biodiversity loss, water quality, or soil health. Qur'an 28:77 teaches that humans should seek the Hereafter without forgetting their share in the world, and Qur'an 55:7–9 presents balance as a feature of creation. The Prophetic tradition also provides a concrete environmental ethic: planting a tree from which people, birds, or animals eat is described as an act of charity (Sahih al-Bukhari 2320) [8].

A student project might test water quality in a local river, identify pollutants, calculate concentrations, create a visual map, and present recommendations to the community. The learning outcome is scientific, but the character outcome is *amanah* and service.

4.3.2 Technology: Capability Under Moral Discipline

Technology education should include digital ethics. Students can study algorithms, data, artificial intelligence, and media while asking questions about privacy, bias, misinformation, accessibility, and human dignity. The principle of *amanah* is particularly useful. If data belongs to people, students should learn that technical access does not automatically mean moral permission.

The Prophetic teaching to speak well or remain silent (Bukhari 6018) can serve as a starting point for digital communication ethics. Students can evaluate social media posts, deepfakes, persuasive design, and AI-generated content. The aim is not to instill fear of technology education; it is to make technological power responsible [8].

4.3.3 Engineering: Design as Service

Engineering is perhaps the clearest place to apply *khidmah*. Students can be given community problems: affordable water filtration, low-cost cooling, accessible ramps, energy-saving, safe cooking devices, agricultural irrigation, or assistive technology.

A Yusufian approach asks four questions before the prototype:

What problem are we solving?

Who benefits?

Who may be harmed or excluded?

What responsibilities continue after the product is built?

This turns engineering from "making things" into "responsible making."

4.3.4 Arts: Beauty, Meaning, and Communication

The arts component should not be treated as decoration. It can help students communicate scientific evidence, explore cultural heritage, visualize data, design public messages, and examine moral emotions. Shaykh Yusuf's own corpus is written in a pedagogical and literary style, using metaphors and spiritual language to guide readers. This supports the idea that communication is part of knowledge.

A project on water conservation could therefore include scientific measurement, mathematical modeling, engineering design, and a visual campaign created with local

cultural references. Art is not just an extra poster; it shapes how knowledge becomes understandable and socially useful.

4.3.5 Mathematics: Honesty, Proportion, and Disciplined Reasoning

Mathematics can become a strong character-building discipline because it rewards precision and exposes inconsistency. Students can work with ratios, probability, statistics, optimization, and modeling while discussing honesty in data representation. A graph that hides a relevant scale can be technically correct but ethically misleading.

The Qur'anic concern for measure and balance and the Prophetic emphasis on honesty provide a natural ethical context. Students should learn to report uncertainty, distinguish correlation from causation, and avoid manipulating figures to make a project appear more successful.

4.4 Sample Integrated Project: "Water, Mercy and Sustainable Community"

A model eight-week project can bring the framework together through the challenge of reducing household water waste and improving awareness of safe water use. In Week 1, Niyyah and community listening, students identify the problem, engage with community members, and define the intended social benefit. Week 2 focuses on science inquiry, in which students test or research water sources, contamination, evaporation, household consumption, and local environmental conditions. In Week 3, mathematics, students calculate water consumption, compare household usage, estimate potential savings, and model the impact of different interventions. Week 4 focuses on engineering, with teams designing a low-cost water-saving device or collection system. In Week 5, students create a simple sensor, spreadsheet, dashboard, or educational digital tool. Week 6 emphasizes arts and communication, as students develop visual explanations, infographics, short videos, or culturally appropriate public messages. Week 7 involves testing and revision, during which teams test their prototypes, collect data, identify failures, and revise their designs. Finally, Week 8, Muhasabah and service, requires students to present their results, report limitations, reflect on their teamwork, and consider how the project could continue beyond the assessment period. The final product is therefore not the sole basis of assessment; students are also assessed on their technical learning, ethical decision-making, teamwork, honesty in reporting, resilience, reflection, and the usefulness of their work to the community.

4.5 Prophetic Pedagogy and the Role of the Teacher

The teacher is central to the proposed framework. Character cannot be taught only through worksheets. The Prophetic model combines instruction, example, questioning, correction, compassion, and practical action. The Hadith of Jibril itself is a teaching scene: a visitor asks structured questions, the Prophet answers, and the companions learn through the interaction. This supports dialogical pedagogy [8].

Shaykh Yusuf's writings likewise use a teacher-to-seeker voice. The learner is addressed as a companion and traveler. The relationship is therefore formative. A teacher

who demands honesty but changes data to improve class results teaches contradiction. A teacher who asks students to respect others but humiliates weak students teaches another lesson. Character education begins with the educational environment.

The teacher in a Yusufian STEAM classroom should therefore model three forms of integrity. First, intellectual integrity: admitting uncertainty and correcting mistakes. Second, ethical integrity: applying rules fairly and protecting students and communities. Third, spiritual integrity: remembering that education is an *amanah* rather than a performance for prestige.

5 Discussion

The proposed model has several implications. First, it offers a way to move beyond the false choice between religious education and modern science education. The framework does not require replacing scientific methods with religious claims. It asks a different question: how should scientific and technological abilities be directed?

Second, it gives the "A" in STEAM a deeper role. The arts can support meaning, empathy, cultural memory, and communication. In an Islamic context, this can include careful engagement with Islamic geometric design, calligraphy, architecture, storytelling, and visual communication, while respecting the school's theological and legal approach to artistic practice.

Third, the model turns a character from an abstract list into a set of observable practices. Honesty becomes transparent data reporting. Amanah becomes responsible for handling information. Sabr becomes a disciplined iteration. Rahmah becomes an inclusive design. Humility becomes a willingness to revise a claim. Service becomes the solution to a real community problem. This makes the character accessible without pretending that inner spiritual states can be fully measured.

Fourth, Shaykh Yusuf provides a particularly strong foundation for the model within Nusantara. His intellectual biography itself demonstrates mobility across regions and traditions. His writings were written in Arabic but became part of the Indonesian and, later, South African Muslim heritage. His life shows that Islamic scholarship can be both deeply rooted and internationally connected. This makes him particularly well-suited to a conference focused on the intellectual legacy of Nusantara ulama and global wisdom.

The framework also fits the contemporary need for human skills. The World Economic Forum reports that analytical thinking remains a core skill, while creative thinking, resilience, empathy, curiosity, and technological literacy are also important. These are not identical to Islamic virtues, but there are meaningful points of contact. The Islamic contribution is to place such skills within accountability, worship, service, and moral purpose [5].

This article has four limitations. First, the study is conceptual and textual. It does not report classroom intervention data. Second, Shaykh Yusuf's seventeenth-century categories cannot simply be equated with twenty-first-century educational terminology. The proposed mapping is interpretive. Third, Sufi concepts such as dhikr, tawhid, and ihsan have theological depth that curriculum outcomes cannot fully capture. Fourth, the

model is designed primarily for Muslim educational settings; adaptation to plural or non-Muslim settings would require a different normative structure.

Future research should develop and pilot the framework in madrasah, pesantren, Islamic universities, and Muslim-majority public-school contexts. Mixed-method studies could compare conventional STEAM with character-based STEAM using measures of creativity, ethical reasoning, collaboration, environmental responsibility, and reflective practice. Researchers should also examine teacher readiness, student perceptions, parental expectations, and community outcomes.

A particularly important area is digital and artificial intelligence education. The rapid spread of generative AI makes the distinction between intelligence and wisdom increasingly important. A student may have access to a powerful tool without having the character needed to use it honestly. Shaykh Yusuf's emphasis on intention, remembrance, discipline, and action offers a useful ethical lens for this emerging challenge.

6 Conclusion

Shaykh Yusuf al-Makassari's legacy can contribute to modern education not by turning his seventeenth-century Sufi texts into a modern science textbook, but by recovering their deeper educational vision. His writings present knowledge as a journey in which the learner must develop discipline, remembrance, good character, humility, responsibility, and useful action. The Qur'an and Sunnah support the same integrated vision: knowledge should be connected to faith, intention, ihsan, benefit, and mercy.

Modern STEAM education already provides powerful methods for inquiry, creativity, design, collaboration, and problem-solving. What it often needs is a stronger answer to the question of purpose. The Yusufian Ethical-Spiritual STEAM Framework proposed here answers by placing tawhid and *niyyah* at the level of purpose, character at the level of disposition, and STEAM practices at the level of action.

The resulting curriculum is not simply "STEAM plus Islamic values." It is a different educational logic: students inquire because truth matters; design because people need help; calculate because accuracy is an *amanah*; create because meaning and beauty communicate knowledge; use technology because tools can serve human welfare; and reflect because every form of knowledge carries responsibility.

Such a model is particularly relevant to the 400th-anniversary remembrance of Shaykh Yusuf's birth in 2026. His intellectual legacy can be renewed when it becomes a living educational practice rather than only a historical memory. A character-based STEAM curriculum rooted in his ethical and spiritual teachings can help form learners who are not only capable of solving difficult problems but also prepared to ask whether those problems should be solved, for whom, with what consequences, and in whose service. That is a form of sustainable civilization in which knowledge, character, and useful action remain connected.

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