



SUSTAINABLE CURRICULUM MANAGEMENT IN ISLAMIC HIGHER EDUCATION: THE S-CURVE FRAMEWORK FOR SUSTAINABLE DEVELOPMENT, SOCIAL HARMONY, AND GLOBAL TRANSFORMATION

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Abstract

Sustainable curriculum management has become a strategic concern for Islamic higher education as ecological crises, technological disruption, social inequality, and religious polarization increasingly shape the future of learning. This study aims to formulate an interdisciplinary framework for managing sustainable curricula in Islamic higher education. It addresses three questions: how sustainable curriculum management is conceptualized in recent scholarship; which managerial dimensions are necessary for effective implementation; and how Islamic ethics, sustainable development, social harmony, and global-digital competence can be integrated into one operational model. The study uses a qualitative conceptual design and an integrative review of fifteen peer-reviewed journal articles published between 2021 and July 2026. The literature was selected according to relevance to curriculum management, education for sustainable development, Islamic education, religious moderation, transformative pedagogy, and artificial intelligence in higher education. The analysis employed thematic comparison and conceptual synthesis. The results identify four recurring problems: fragmented sustainability content, weak translation of Islamic values into institutional practice, limited stakeholder participation, and inadequate assessment of sustainability competencies. In response, the study proposes the S-CURVE framework, comprising Spiritual-ethical foundations, Collaborative governance, Unified interdisciplinary curriculum design, Responsive transformative pedagogy, Verification and continuous quality improvement, and Engagement with society, ecosystems, and global networks. The study concludes that sustainable curriculum management requires whole-institution transformation rather than the addition of isolated environmental topics. The framework offers a management-oriented contribution for developing graduates who are ethically grounded, socially inclusive, ecologically responsible, digitally literate, and globally competent.

Keywords *Sustainable Curriculum Management, Islamic Higher Education, Education for Sustainable Development, Social Harmony, Global Transformation*

INTRODUCTION

Higher education is increasingly expected to respond to interconnected ecological, social, economic, technological, and ethical challenges. Supporting the importance of integrating education for sustainable development into the curriculum, institutional transformation and the management of higher education institutions. Climate change, environmental degradation, social inequality, religious polarization, digital disruption, and the rapid development of artificial intelligence have altered not only the content that students need to learn but also the ways in which curricula should be planned, implemented, evaluated, and continuously improved. Consequently, sustainability can no longer be treated as an optional topic positioned at the margins of a curriculum. It must

become an institutional orientation that influences educational goals, graduate attributes, learning experiences, assessment systems, academic leadership, and university–community relationships (Abo-Khalil, 2024).

Recent studies indicate that higher education institutions have adopted diverse strategies for incorporating sustainable development into teaching, research, institutional management, and partnerships. Nevertheless, implementation is frequently fragmented. Sustainability may appear in isolated courses, extracurricular activities, campus greening programs, or institutional reports without being systematically connected to curriculum policy, program learning outcomes, pedagogical practices, and quality assurance (Lim et al., 2022). A systematic approach therefore requires more than inserting Sustainable Development Goals terminology into course descriptions. It requires alignment between institutional vision, curriculum architecture, lecturer competence, student learning, organizational culture, resource allocation, and external engagement (Karvonen, 2026).

This challenge is particularly significant for Islamic higher education. Islamic educational institutions possess moral and intellectual resources that are compatible with sustainable development, including the principles of *tawhīd* or the unity of creation, *khalīfah* or human stewardship, *amānah* or moral responsibility, *‘adl* or justice, *mīzān* or balance, and *maṣlaḥah* or the common good. These concepts provide a normative foundation for environmental responsibility, social justice, ethical economic activity, and peaceful coexistence. (Al-Jayyousi et al., 2022) However, the existence of Islamic values at the philosophical level does not automatically guarantee that they are translated into curriculum policies, learning activities, institutional governance, or measurable graduate competencies.

Recent empirical evidence from Islamic higher education demonstrates that an Education for Sustainable Development-based curriculum can improve students’ sustainability competencies. At the same time, ethical or religious leadership may have only a limited direct effect when its values are not supported by operational systems, curriculum structures, pedagogical practices, and institutional accountability (Abdullah et al., 2026). This indicates a gap between normative commitment and managerial implementation. Islamic institutions may strongly articulate moral values while still lacking mechanisms for curriculum integration, cross-disciplinary cooperation, community-based learning, sustainability assessment, and continuous improvement.

Sustainable curriculum management in Islamic higher education should also address social harmony. Universities are not only centers for professional preparation but also spaces in which students encounter religious, cultural, social, and intellectual differences. Research on Indonesian Islamic higher education shows that religious moderation can be cultivated through curricula, campus religious activities, institutional culture, and engagement with pesantren traditions. Relevant values include national commitment, tolerance, non-violence, respect for diversity, and accommodation of local culture (Nasir & Rijal, 2021). Therefore, sustainability must be understood broadly, encompassing the sustainability of natural ecosystems, human dignity, peaceful communities, ethical institutions, and intergenerational well-being.

Global transformation introduces an additional challenge. Graduates need the capacity to communicate across cultures, understand multiple epistemological traditions, collaborate internationally, and respond critically to digital technologies. Internationalizing the curriculum for sustainable development should not (Chan, 2023) merely reproduce dominant Western knowledge. It should create dialogue among global science, Islamic intellectual traditions, local knowledge, and Indigenous or community-based experience (Mbah et al., 2024). Similarly, the expansion of artificial intelligence requires curriculum policies covering AI literacy, ethical use, privacy, accountability, academic integrity, accessibility, and the continuing importance of human judgment (Chan, 2023).

Despite the growing literature on sustainability in higher education, Islamic environmental ethics, religious moderation, transformative learning, and AI governance, these fields are often discussed separately. There remains a need for a management-oriented framework that integrates them into a coherent system of curriculum governance. This article addresses that need by proposing the S-CURVE framework for sustainable curriculum management in Islamic higher education.

The study is guided by the following research questions: How is sustainable curriculum management conceptualized in recent higher education and Islamic education scholarship? What managerial dimensions are necessary for implementing a sustainable curriculum effectively? How can Islamic ethics, sustainable development, social harmony, and global-digital competence be integrated into an operational curriculum management framework? The article contributes to scholarship by shifting the discussion from sustainability as curriculum content to sustainability as a comprehensive management process. It also offers an interdisciplinary framework that connects Islamic moral epistemology, Education for Sustainable Development, social harmony, interculturality, digital ethics, and institutional quality assurance.

Literature Review

Sustainable Curriculum Management

Curriculum management encompasses systematic processes through which institutions formulate curriculum policies, determine learning outcomes, organize knowledge, allocate responsibilities, implement learning, evaluate results, and improve academic programs. Within a sustainability perspective, these processes should enable institutions to prepare learners to understand complex systems, evaluate long-term consequences, negotiate competing interests, and participate responsibly in social and ecological transformation.

Contemporary scholarship distinguishes between additive and transformative approaches to sustainability. An additive approach introduces environmental topics, SDG terminology, or sustainability-related assignments into existing courses without changing the underlying curriculum structure. A transformative approach, by contrast, reconsiders the purposes of education, relationships between disciplines, teaching methods, assessment systems, institutional practices, and connections between universities and society.

Research examining SDG integration in higher education demonstrates that effective initiatives connect curricula with research and external partnerships. Institutions introduce new courses and modules, promote interdisciplinary programs, and collaborate with governmental agencies, civil society, communities, and businesses (Viera Trevisan et al., 2024). Such findings suggest that curriculum sustainability depends on a network of institutional activities rather than on classroom content alone.

A systematic review of Education for Sustainable Development literature identifies structural transformation, course coordination, university management, awareness, commitment, and evaluation as recurrent implementation domains (Lim et al., 2022). These categories are especially relevant to curriculum management because they demonstrate that sustainability is simultaneously academic, organizational, cultural, and political.

Transformative organizational learning further strengthens this position. Universities advancing sustainability do not simply require individual lecturers who understand sustainability. They require institutional learning processes through which departments reflect on established practices, exchange knowledge, revise procedures, experiment with new approaches, and embed successful innovations into routine governance (Viera Trevisan et al., 2024). Sustainable curriculum management is therefore a form of organizational transformation.

Islamic Ethical Foundations for Sustainability

Islamic perspectives on sustainable development emphasize the relationship between spiritual accountability, human welfare, ecological balance, and justice. Islamic teachings do not position nature exclusively as an economic resource. The natural world is part of a divinely created order in which human beings exercise limited and accountable stewardship.

A systematic review of Islamic worldviews and sustainable development identifies recurring themes such as justice, balance, human-centred development, poverty reduction, ethical consumption, responsible finance, protection of natural resources, and accountability before God (Al-Jayyousi et al., 2022). These themes broaden sustainability beyond technical environmental management. They connect material development with moral purpose, social inclusion, and intergenerational responsibility.

For curriculum management, Islamic values should function at three levels. First, they provide the philosophical foundation for institutional vision and graduate identity. Second, they guide the selection and interpretation of curriculum content. Third, they shape professional behaviour, institutional decision-making, and the assessment of educational outcomes.

The integration of Islamic values should not result in superficial attachment of Qur'anic verses to conventional sustainability content. Instead, it should facilitate critical dialogue between Islamic sources, contemporary sciences, social realities, and professional practice. Students should be encouraged to examine how *amānah*, *ʿadl*, *mīzān*, *khalīfah*, and *maṣlahah* influence decisions about resource use, organizational governance, technology, public policy, economic justice, and community welfare.

Evidence from eco-pesantren initiatives illustrates the potential of such integration. Islamic educational institutions can connect religious instruction, ecological knowledge, community alliances, institutional leadership, and direct conservation practices (Subaidi et al., 2023). The significance of these initiatives lies not merely in teaching environmental awareness but in establishing an educational culture in which religious meaning is translated into collective ecological action.

Social Harmony and Religious Moderation

Sustainable development is impossible where communities are characterized by exclusion, religious hostility, violence, or persistent distrust. Social harmony should consequently be understood as a substantive component of sustainable curriculum management. Religious moderation in Islamic education involves a balanced approach to religious commitment that rejects both indifference and extremism. It encompasses tolerance, non-violence, national responsibility, openness to local culture, and respect for different religious communities. These values do not weaken religious identity; rather, they provide an ethical framework for expressing religious conviction in plural societies.

Research in Indonesian Islamic universities shows that moderation can be mainstreamed through an eclectic curriculum, pesantren-based educational culture, academic discussions, student activities, and institutional practices (Mbah et al., 2024). Another study emphasizes that internalization requires more than cognitive explanation. Students need processes of value transformation, value transaction, reflection, dialogue, habituation, and exemplary conduct (Kiai et al., n.d.).

Accordingly, social harmony should be integrated into curriculum policy, learning outcomes, teaching materials, classroom interaction, community engagement, and assessment. Students should develop the ability to interpret religious differences responsibly, communicate across identities, evaluate misinformation, prevent dehumanization, and resolve disagreement without violence.

Transformative and Experiential Pedagogy

Sustainable curriculum objectives cannot be achieved through lectures and content transmission alone. Sustainability problems are complex, value-laden, and connected to real-world systems. Students therefore need active, reflective, participatory, interdisciplinary, and experiential learning.

Studies of ESD courses identify several practices valued by students, including authentic case studies, problem-based learning, interdisciplinary dialogue, local relevance, reflective assignments, collaborative projects, and opportunities to connect knowledge with action (Araneo, 2024). Active learning, flipped classroom models, and reflective practice can help students move beyond factual knowledge toward critical self-examination, systems thinking, and behavioural responsibility (Howell, 2021).

Within Islamic education, transformative pedagogy can connect the integration of knowledge, faith, and action. Learning should facilitate movement from understanding Islamic ethical concepts to applying them in professional, ecological, social, and technological contexts. Examples include sustainability audits of campus facilities,

community waste-management projects, interfaith environmental initiatives, ethical evaluations of business practices, analyses of digital misinformation, and design projects addressing local SDG-related challenges.

Interculturality, Global Competence, and Local Knowledge

The global dimension of sustainability requires graduates to understand transnational problems while remaining attentive to local contexts. Internationalization should therefore develop intercultural competence, epistemic humility, and the ability to work with diverse knowledge traditions.

An internationalized sustainable curriculum should avoid assuming that valid knowledge flows in only one direction. Islamic scholarship, Indigenous knowledge, local culture, scientific research, professional expertise, and community experience can be brought into constructive dialogue. Recent scholarship argues that sustainable curriculum internationalization should include non-Western epistemologies and meaningful human engagement across cultural contexts (Mbah et al., 2024).

For Islamic higher education, this creates an opportunity to position Islamic intellectual traditions as active contributors to global sustainability discourse rather than as isolated religious content. Students can compare Islamic environmental ethics with other religious and philosophical traditions, analyze local practices through global sustainability frameworks, and communicate context-sensitive solutions internationally.

Artificial Intelligence and Digital Ethics

Artificial intelligence is becoming embedded in learning, research, professional practice, and institutional administration. Sustainable curriculum management must therefore include AI literacy and digital ethics as cross-curricular competencies. An AI-across-the-curriculum model emphasizes that AI literacy is relevant to students from all disciplines, not only computer science. Students need to understand fundamental AI concepts, identify appropriate uses, evaluate outputs, recognize limitations and bias, and consider social and ethical consequences (Somasundaram et al., 2020).

University AI policy also requires integration across pedagogical, governance, and operational dimensions. Pedagogical policies address learning design and assessment; governance policies address privacy, accountability, security, intellectual property, and academic integrity; and operational policies address infrastructure, access, training, and institutional support (Chan, 2023). These dimensions parallel the requirements of sustainable curriculum management.

In Islamic higher education, digital ethics can be connected to *amanah*, honesty, justice, human dignity, and prevention of harm. The curriculum should prepare students to use AI transparently, protect personal data, verify generated information, recognize algorithmic discrimination, maintain intellectual responsibility, and avoid replacing moral judgment with automated decision-making.

METHODS

Research Design

This study employed a qualitative conceptual design using an integrative literature review. The method was selected because the study aimed to synthesize ideas from several related but frequently separated fields: curriculum management, Education for Sustainable Development, Islamic education, social harmony, transformative pedagogy, intercultural curriculum, and artificial intelligence in higher education.

Unlike a statistical meta-analysis, the integrative review sought to identify conceptual relationships, implementation patterns, institutional challenges, and managerial implications. The final product was not a measurement of intervention effects but an interdisciplinary framework that can guide policy development and subsequent empirical research.

Literature Identification and Selection

Relevant literature was identified through searches of journal publisher databases and academic indexing portals. Keyword combinations included are presented in Table 1.

Table 1. Keywords for literature

No	Keyword combinations
1	sustainable curriculum management;
2	education for sustainable development and higher education;
3	Islamic education and sustainable development;
4	Islamic higher education and curriculum;
5	religious moderation and higher education;
6	social harmony and Islamic education;
7	transformative pedagogy and sustainability;
8	internationalized curriculum and sustainable development; and
9	artificial intelligence and higher education curriculum.

The inclusion criteria were:

1. publication in a peer-reviewed journal;
2. publication between January 2021 and July 2026;
3. relevance to at least one central research domain;
4. sufficient conceptual or empirical detail to support thematic analysis; and
5. publication in English or Indonesian.

Books, book chapters, proceedings, editorials without analytical content, duplicate records, and studies without meaningful implications for curriculum or institutional management were excluded. Fifteen journal articles were retained as the core analytical corpus.

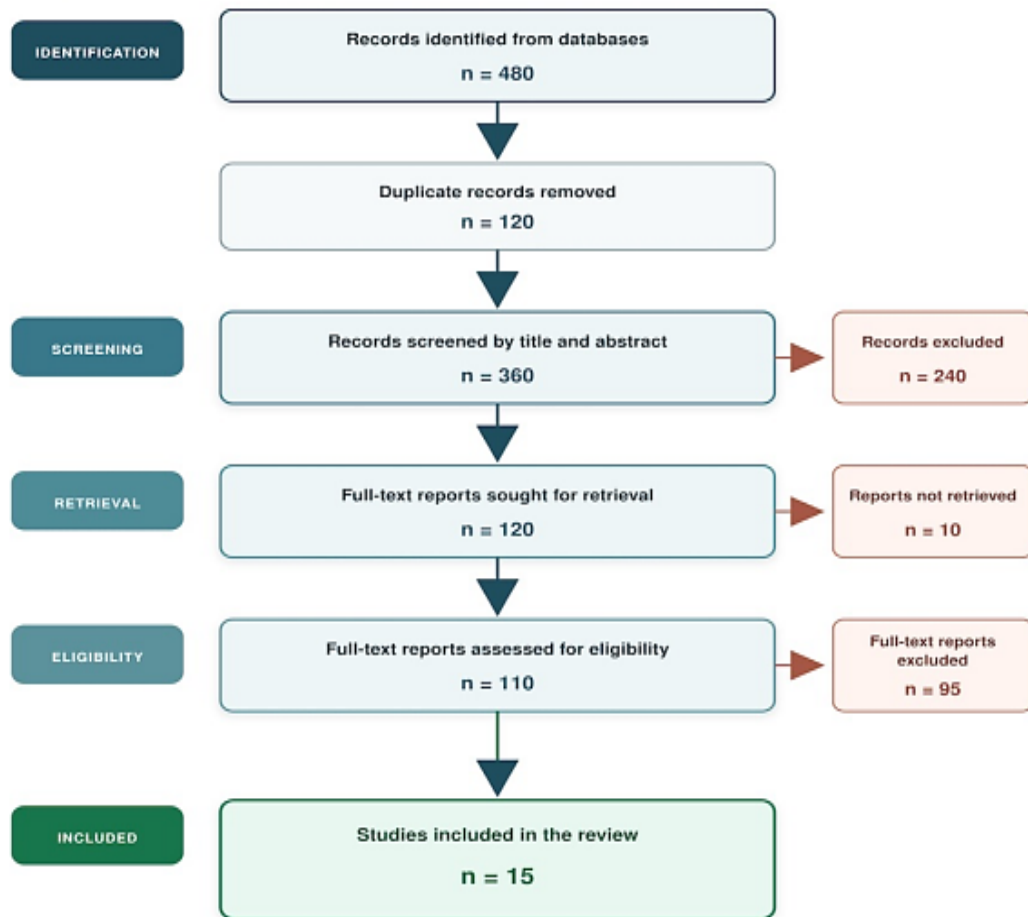


Figure 1. PRISMA flow diagram of the study selection process

Data Analysis

The literature was analyzed in three stages. First, each article was examined for its purpose, theoretical foundation, method, major findings, implementation challenges, and curriculum implications. Second, recurring concepts were grouped through thematic comparison. Third, the themes were synthesized into managerial dimensions. The synthesis was guided by four analytical questions:

1. What should be sustained?
2. Which institutional processes enable sustainability?
3. Which competencies should graduates develop?
4. How can implementation be evaluated and improved?

The resulting framework was assessed for conceptual coherence, applicability to Islamic higher education, and alignment with the conference themes of sustainable development, harmony, and global transformation.

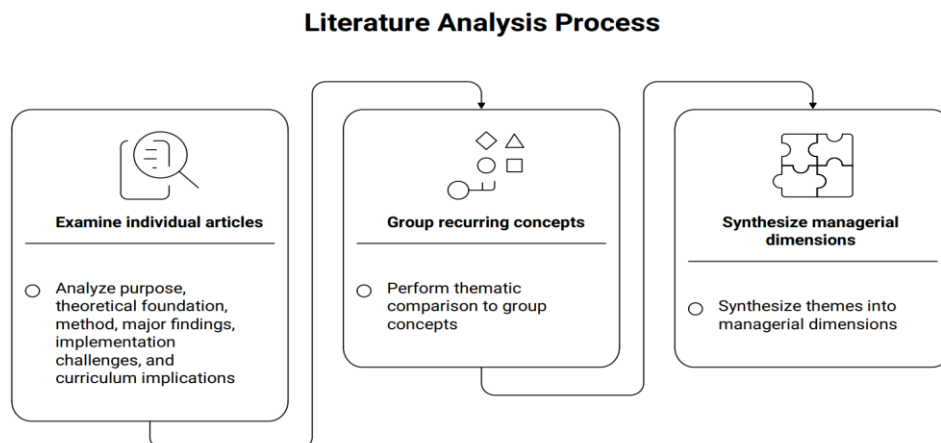


Figure 2. Literature Analysis Process

RESULTS

Recurring Problems in Sustainable Curriculum Implementation

Fragmented Curriculum Integration

Sustainability is often introduced in higher education through isolated efforts such as individual courses, elective modules, temporary projects, or campus activities. These initiatives play an important role in raising awareness among students and staff about environmental and social issues. However, these efforts tend to be fragmented and lack integration into the broader academic framework. As a result, sustainability education may remain peripheral rather than becoming a core element of the institution's mission. Without cohesive planning, these activities risk being seen as optional or supplementary. Their potential to foster deep and lasting change in institutional culture.

Moreover, while such efforts increase awareness, they do not necessarily lead to modifications in key academic elements like program learning outcomes, assessment systems, or lecturer collaboration. The absence of sustainability in these fundamental aspects means that students may not develop the competencies and mindsets needed to address complex sustainability challenges. Institutional priorities also remain largely unchanged when sustainability is not embedded within strategic plans or resource allocation decisions. This disconnect between awareness-raising activities and institutional transformation undermines the long-term impact of sustainability initiatives. To move forward, institutions must integrate sustainability across all dimensions of their operations and governance. This requires systemic change rather than isolated projects or isolated course offerings.

Sustainability education gains limited traction when confined to discrete activities without institutional backing. To create meaningful change, sustainability must be embedded in curricula, assessments, and institutional policies. Only with comprehensive integration can education truly prepare students to contribute to a sustainable future. (Basheer et al., 2025) stated that the integration of sustainability into curricula has been

widely recognized as a crucial step in fostering responsible management education. Interdisciplinary approaches play a key role in enhancing sustainability education, as they allow for a more comprehensive and applied understanding of sustainability challenges.

The literature indicates that integration is stronger when SDG-related objectives are mapped across courses and connected to research, partnerships, and institutional operations (Rajabifard et al., 2021). Sustainability should therefore be visible vertically from institutional vision to course assessment and horizontally across disciplines, academic units, and community activities.

Normative Values Without Operational Mechanisms

Islamic ethical concepts are deeply rooted in principles that strongly align with sustainability, emphasizing stewardship of the environment, social justice, and responsible resource management. However, despite this natural compatibility, the practical implementation of these values within institutions remains limited and underdeveloped. Often, such ethical values are mentioned only superficially in mission statements or integrated into religious courses but do not permeate deeper institutional functions.

This results in a lack of influence on critical areas such as budgeting decisions, curriculum design and review, teaching methodologies, technology adoption, and quality assurance processes. Without these values being embedded into the core operational and strategic frameworks, their impact on promoting sustainable development is minimal. To achieve meaningful sustainability outcomes, institutions need to move beyond symbolic inclusion and adopt concrete measures that reflect Islamic ethics in everyday practices. Stronger commitment is required to translate these values into actionable policies and guidelines across all levels of institutional governance. Only then can the full potential of Islamic ethical teachings contribute effectively to sustainable progress. This holistic approach ensures that ethical principles are not only taught but also practiced and evaluated continuously.

Recent empirical findings show that Islamic leadership can shape ethical awareness, yet its direct influence on sustainable management outcomes may remain limited unless mediated by student competence and institutional systems (Abdullah et al., 2026). This suggests that values must be translated into policies, indicators, responsibilities, learning experiences, and evaluative evidence.

Limited Participation and Interdisciplinary Collaboration

Sustainability problems inherently cross disciplinary and organizational boundaries, requiring integrated and collaborative approaches to address them effectively. Despite this, curriculum decisions are frequently made within isolated departmental structures that limit interdisciplinary collaboration and a holistic understanding of sustainability. This siloed approach can hinder the development of comprehensive learning experiences that prepare students to tackle complex, real-world challenges.

Students and external stakeholders often have minimal involvement in curriculum design, which further limits the relevance and responsiveness of educational programs to societal needs. Incorporating diverse perspectives from learners and community members

can enrich the curriculum and better align it with current sustainability challenges. Their participation can also increase engagement and ownership of learning outcomes. To enhance the effectiveness of sustainability education, institutions should explore more inclusive and collaborative curriculum development processes that connect multiple disciplines and stakeholder voices.

The literature supports multidisciplinary courses, collaborative learning, community partnerships, and institutional networks (Avelar et al., 2023; Araneo, 2024). Sustainable curriculum management must involve various elements including lecturers from various disciplines, students, alumni, employers, Muslim scholars, community organizations, environmental actors, and technology specialists. Thus, an agreement can be reached properly and according to expectations.

Inadequate Assessment of Sustainability Competencies

Traditional exams typically only assess the ability to remember or repeat information that has been taught. However, these methods are not able to capture important aspects such as ethical reasoning required in sustainability-related decision-making. In addition, traditional exams also fail to evaluate systems thinking abilities, which are critical to understanding complex relationships in environmental and social issues.

Furthermore, conventional assessments do not measure students' ability to work together to solve problems collaboratively. Aspects of ecological responsibility and ability to act in complex situations are also often overlooked. Therefore, a more holistic and contextual approach to evaluation is urgently needed to measure sustainability competencies across the board.

Assessment should include authentic projects, reflective portfolios, case analysis, community-based assignments, ethical decision-making, interdisciplinary design, and observable impact. Continuous quality improvement should use evidence from student performance, stakeholder feedback, graduate outcomes, community partnerships, and institutional practices.

Core Competencies of a Sustainable Islamic Curriculum

Table 2 displays the core competencies of sustainable Islamic curriculum which involves six domains.

Table 2. The synthesis identified six graduate competency domains

Competency domain	Description
Spiritual-ethical competence	Applying Islamic ethical principles to personal, professional, social, ecological, and technological decisions
Systems-thinking competence	Understanding relationships among environmental, social, economic, cultural, political, and spiritual systems
Anticipatory competence	Evaluating long-term consequences, uncertainty, risk, and intergenerational impacts
Collaborative competence	Working across disciplines, religions, cultures, institutions, and communities

Competency domain	Description
Transformative action competence	Designing and implementing responsible responses to real sustainability problems
Global-digital competence	Engaging interculturally and using digital technologies and AI critically, ethically, and transparently

These competencies should not be assigned to one sustainability course. They should be distributed across the curriculum and developed progressively from introductory to advanced levels.

The S-CURVE Framework

Based on the thematic synthesis, this study proposes the S-CURVE Framework for Sustainable Curriculum Management as seen in Table 3.

Table 3. S-CURVE Frameworks

Dimension	Primary purpose	Principal mechanisms	Illustrative indicators
S — Spiritual-ethical foundations	Establish a coherent Islamic moral orientation	Institutional philosophy; <i>maqāṣid al-shari‘ah</i> ; <i>amānah</i> ; ‘ <i>adl</i> ; <i>mizān</i> ; <i>khalīfah</i> ; <i>maṣlaḥah</i>	Islamic sustainability principles reflected in graduate profiles, policies, learning outcomes, and ethical decisions
C — Collaborative governance	Distribute ownership and accountability	Sustainability curriculum committee; student participation; stakeholder consultation; cross-faculty coordination	Representation of relevant stakeholders; defined responsibilities; transparent decisions; resource commitment
U — Unified interdisciplinary curriculum design	Integrate sustainability across programs	Curriculum mapping; SDG alignment; vertical and horizontal coherence; local-global knowledge dialogue	Sustainability outcomes mapped across courses; interdisciplinary modules; reduced content duplication and gaps
R — Responsive transformative pedagogy	Connect learning with complex real-world challenges	Problem-based learning; community projects; reflective learning; interfaith dialogue; AI-assisted learning with safeguards	Authentic projects; active student participation; evidence of ethical reasoning and behavioural application
V — Verification and continuous	Assess competence and	Rubrics; portfolios; curriculum audits; stakeholder	Measurable competence attainment;

Dimension	Primary purpose	Principal mechanisms	Illustrative indicators
quality improvement	institutional effectiveness	feedback; graduate tracking; periodic review	improvement actions; documented curriculum revisions; public accountability
E — Engagement with society, ecosystems, and global networks	Extend learning beyond the classroom	Community partnerships; eco-campus initiatives; international collaboration; professional networks; service learning	Sustained partnerships; community benefits; ecological impact; intercultural learning; globally shared outputs

Spiritual-Ethical Foundations

The first dimension establishes the moral goals of sustainable curriculum management. This goal is the main foundation that directs the entire education management process in the context of sustainability. With this moral goal in mind, the curriculum focuses not only on academic aspects, but also on the ethical values underlying educational development.

Islamic values need to be the basis for institutional vision, curriculum-related decision-making, professional ethics, and evaluation standards applied. This ensures that all educational policies and practices are aligned with Islamic principles that prioritize justice, responsibility, and balance in resource management and learning. Sustainability is seen as a form of responsibility to God, fellow humans, other living beings, and future generations. This approach emphasizes that continuous education is not just a worldly task, but also a spiritual obligation that must be carried out with full awareness and commitment.

Collaborative Governance

The second dimension recognizes that sustainability cannot be implemented by an individual lecturer or administrative unit. A governance structure should coordinate academic leaders, lecturers, students, quality assurance staff, community representatives, religious scholars, employers, environmental experts, and digital technology specialists. Collaborative governance should specify authority, resources, decision-making procedures, reporting responsibilities, and conflict-resolution mechanisms. Participation must be substantive rather than ceremonial.

Unified Interdisciplinary Curriculum Design

The third dimension connects institutional values to curriculum architecture. Sustainability learning outcomes should be mapped across programs and courses. The mapping process should identify where competencies are introduced, reinforced, assessed, and demonstrated at an advanced level.

Unified design does not require every course to cover all SDGs. Each discipline should identify its most meaningful contribution while recognizing relationships with other fields. Islamic studies can engage environmental ethics and social justice; economics can address responsible production and inequality; management can address ethical governance; education can address transformative learning; information technology can address sustainable computing and AI ethics

Responsive Transformative Pedagogy

The fourth dimension emphasizes learning experiences that respond to actual problems. Students should investigate local environmental conditions, social conflicts, institutional practices, public policies, business models, or digital technologies and propose ethically grounded solutions. Transformative pedagogy connects cognitive, affective, ethical, and behavioural learning. Reflection is particularly important because students should examine not only external problems but also their own assumptions, privileges, consumption patterns, religious interpretations, and professional responsibilities.

Verification and Continuous Quality Improvement

Dimensi kelima menetapkan akuntabilitas yang berbasis bukti secara jelas dan tegas. Institusi perlu melakukan penilaian secara menyeluruh untuk memastikan bahwa kompetensi keberlanjutan benar-benar tercapai. Selain itu, evaluasi juga harus menilai apakah praktik kurikulum mampu menghasilkan hasil pendidikan dan sosial yang bermakna serta berdampak positif.

Verification includes curriculum audits, assessment rubrics, student portfolios, lecturer reflection, stakeholder feedback, tracer studies, program reviews, and institutional sustainability data. Findings should lead to documented improvement actions rather than merely compliance reports.

Engagement with Society, Ecosystems, and Global Networks

The final dimension connects curriculum with the wider world. Community engagement allows students to understand sustainability as a lived reality rather than an abstract global agenda. Ecosystem engagement connects education with the environmental consequences of institutional and professional practices. Global engagement develops intercultural competence and enables knowledge exchange.

Islamic higher education can establish partnerships with pesantren, schools, religious communities, local government, environmental organizations, social enterprises, professional bodies, international universities, and technology institutions. These partnerships should be reciprocal, long-term, and based on shared learning.

DISCUSSION

From Curriculum Content to an Institutional Ecosystem

The principal theoretical contribution of the S-CURVE framework is its reconceptualization of sustainable curriculum management as an institutional ecosystem. Existing approaches often begin with the question of what sustainability content should

be added to a program. The proposed framework begins with broader questions: What moral purposes guide the institution? Who participates in curriculum decisions? How are disciplines connected? What learning experiences transform students? How is competence verified? How does the institution engage with society and ecosystems?

This shift is important because curriculum sustainability cannot be separated from governance and institutional culture. A university may teach environmental ethics while maintaining environmentally harmful operations. It may teach social justice while excluding marginalized stakeholders from decision-making. It may promote digital innovation while neglecting privacy, unequal access, or academic integrity. Coherence between teaching and institutional practice is therefore essential.

The whole-institution orientation is supported by studies emphasizing structural transformation, organizational learning, interdisciplinary integration, and partnerships (Abo-Khalil, 2024) (Rajabifard et al., 2021); (Viera Trevisan et al., 2024). However, the S-CURVE framework extends these approaches by explicitly positioning Islamic moral epistemology and social harmony within the management architecture.

Operationalizing Islamic Values

A second contribution is the movement from normative Islamic concepts to operational curriculum mechanisms. Islamic sustainability discourse frequently emphasizes *khalifah*, *amānah*, justice, and balance. These principles are essential, but curriculum managers need procedures for translating them into educational practice.

For example, *amānah* can inform policies on academic integrity, responsible AI use, transparent resource management, and professional accountability. *‘Adl* can inform inclusive curriculum representation, equitable access to learning technologies, and attention to vulnerable communities. *Mizān* can inform analysis of ecological limits and balanced development. *Maṣlahah* can guide evaluation of whether innovations genuinely contribute to public well-being.

The recent study of Islamic management education supports the importance of this operationalization. Curriculum integration strengthened sustainable competence, while the direct contribution of Islamic leadership to institutional sustainability was limited when not translated through student capability and organizational mechanisms (Abdullah et al., 2026). The implication is not that Islamic leadership is unimportant but that values require structures through which they can influence practice.

Sustainability and Social Harmony

The framework also broadens sustainability to include peaceful coexistence. Ecological sustainability and social harmony are interconnected because environmental and economic crises can intensify conflict, displacement, competition over resources, inequality, and identity politics.

Curriculum management should therefore integrate religious moderation, intercultural competence, conflict transformation, digital media literacy, and ethical communication. Studies in Islamic higher education demonstrate that moderation is most

effectively developed through a combination of curriculum, institutional culture, dialogue, religious practice, and exemplary leadership (Nasir & Rijal, 2021) (Kiai et al., n.d.).

Social harmony should not be taught as passive tolerance. Students need active competencies for listening, dialogue, cooperation, critical interpretation, prevention of violence, and response to misinformation. Community projects involving participants from different religious or cultural backgrounds can connect harmony with shared ecological and social concerns.

Global Transformation and Digital Responsibility

Global transformation requires curricula that are internationally informed but locally grounded. The inclusion of Islamic and local epistemologies can prevent internationalization from becoming one-directional knowledge transfer. The curriculum should help students interpret global sustainability frameworks through their own intellectual, cultural, and religious traditions while remaining open to other perspectives (Mbah et al., 2024).

Artificial intelligence further demonstrates the need for integrated management. AI affects curriculum content, teaching methods, assessment, research, administration, employment, and social relations. Institutions cannot address these effects through plagiarism rules alone. They need policies covering pedagogy, governance, infrastructure, access, accountability, and ethical literacy (Chan, 2023).

In the S-CURVE framework, AI is not treated as a separate technological issue. It is connected to spiritual ethics, collaborative governance, curriculum design, transformative pedagogy, verification, and global engagement. This approach helps institutions avoid both technological rejection and uncritical adoption.

Practical Implementation Roadmap

The framework can be implemented through three phases.

Phase 1: Diagnosis and Strategic Alignment

Institutions should:

1. establish a cross-functional sustainability curriculum team;
2. clarify the Islamic ethical principles underpinning sustainability;
3. audit existing curricula, assessments, partnerships, and institutional practices;
4. identify gaps, duplication, strengths, and stakeholder expectations;
5. define sustainable graduate attributes; and
6. establish baseline indicators.

Phase 2: Curriculum Redesign and Piloting

Institutions should:

1. map sustainability competencies across programs;
2. redesign selected courses and assessment tasks;
3. develop interdisciplinary learning modules;
4. prepare lecturers through professional development;
5. establish community and industry partnerships;

6. introduce responsible AI guidance; and
7. pilot authentic and reflective assessments.

Phase 3: Institutionalization and Continuous Improvement

Institutions should:

1. integrate indicators into internal quality assurance;
2. review student competency evidence;
3. evaluate stakeholder and community outcomes;
4. allocate sustained financial and human resources;
5. disseminate successful practices across programs;
6. revise policies based on evidence; and
7. report progress transparently

The implementation should be gradual but systemic. The institutions do not need to redesign all programs simultaneously. They should, however, ensure that pilot initiatives are connected to an institutional roadmap rather than remaining isolated projects.

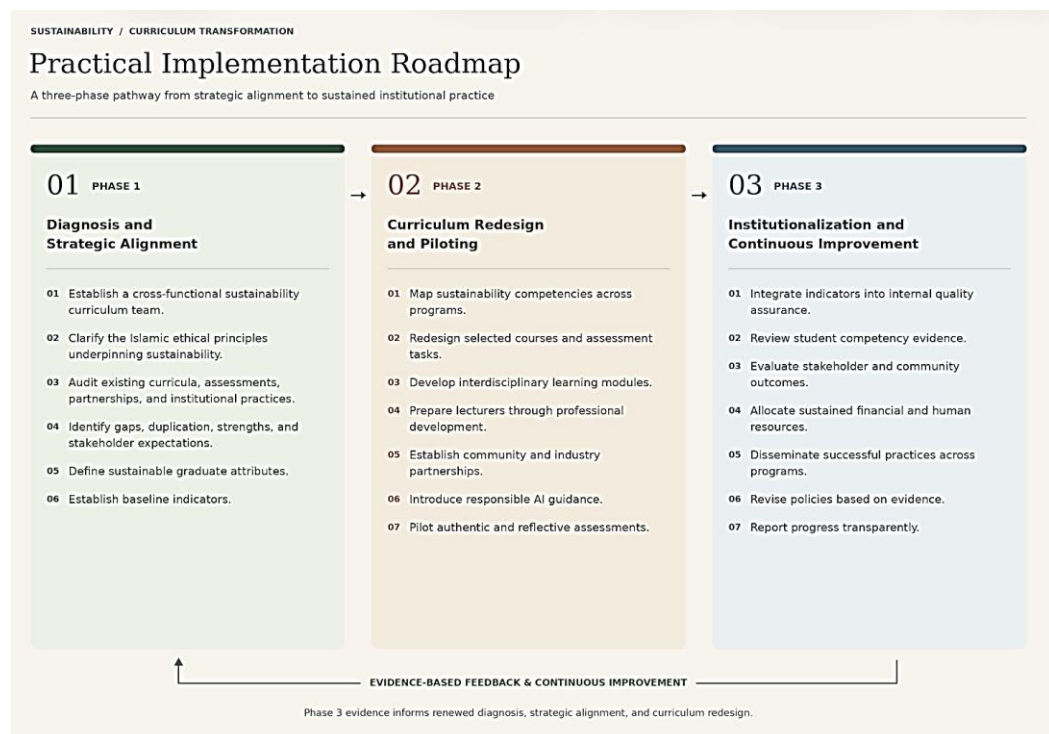


Figure 3. Practical Implementation Roadmap

CONCLUSION

This study formulated an interdisciplinary framework for sustainable curriculum management in Islamic higher education. The literature synthesis identified four recurring weaknesses: fragmented sustainability content, insufficient operationalization of Islamic values, limited stakeholder participation, and inadequate assessment of sustainability competencies.

In response, the proposed S-CURVE framework consists of six mutually reinforcing dimensions: Spiritual-ethical foundations, Collaborative governance, Unified interdisciplinary curriculum design, Responsive transformative pedagogy, Verification and continuous quality improvement, and Engagement with society, ecosystems, and global networks.

The framework demonstrates that sustainable curriculum management is not equivalent to adding environmental topics or SDG labels to existing courses. It requires alignment among institutional philosophy, curriculum policy, learning outcomes, pedagogy, assessment, leadership, quality assurance, technology governance, and external partnerships.

For Islamic higher education, sustainability provides an opportunity to connect Islamic moral principles with contemporary global challenges. Concepts such as *amānah*, *ʿadl*, *mīzān*, *khalīfah*, and *maṣlahah* can strengthen the ethical foundations of ecological responsibility, social inclusion, technological accountability, and peaceful coexistence. Their contribution, however, depends on being translated into operational mechanisms and observable educational practices.

The study concludes that Islamic higher education can play a transformative role by developing graduates who combine religious commitment with systems thinking, ecological responsibility, social harmony, intercultural competence, and ethical digital literacy. The S-CURVE framework provides a conceptual basis for this transformation and a practical guide for curriculum leaders, program managers, quality assurance units, lecturers, and institutional policymakers.

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REFERENCES

- Abdullah, W., Tarihoran, N., Supardi, S., Saenong, F., Wasehudin, W., Syarifuddin, E., Fauzi, A., & Mamur, I. (2026). Advancing sustainable Islamic management education through education for sustainable development. *Discover Sustainability*, 7(1), 257. <https://doi.org/10.1007/s43621-025-02571-1>
- Abo-Khalil, A. G. (2024). Integrating sustainability into higher education challenges and opportunities for universities worldwide. *Heliyon*, 10(9), e29946. <https://doi.org/10.1016/j.heliyon.2024.e29946>
- Al-Jayyousi, O., Tok, E., Saniff, S. M., Wan Hasan, W. N., Janahi, N. A., & Yesuf, A. J. (2022). Re-Thinking Sustainable Development within Islamic Worldviews: A Systematic Literature Review. *Sustainability*, 14(12), 7300. <https://doi.org/10.3390/su14127300>
- Araneo, P. (2024). Exploring education for sustainable development (ESD) course content in higher education; a multiple case study including what students say they like. *Environmental Education Research*, 30(4), 631–660. <https://doi.org/10.1080/13504622.2023.2280438>

- Avelar, A. B. A., da Silva Oliveira, K. D., & Farina, M. C. (2023). The integration of the Sustainable Development Goals into curricula, research and partnerships in higher education. *International Review of Education*, 69(3), 299–325. <https://doi.org/10.1007/s11159-023-10013-1>
- Basheer, N., Ahmed, V., Bahroun, Z., & Anane, C. (2025). Sustainability assessment in higher education institutions: exploring indicators, stakeholder perceptions, and implementation challenges. *Discover Sustainability*, 6(1), 252. <https://doi.org/10.1007/s43621-025-01116-w>
- Chan, C. K. Y. (2023). A comprehensive AI policy education framework for university teaching and learning. *International Journal of Educational Technology in Higher Education*, 20(1). <https://doi.org/10.1186/s41239-023-00408-3>
- Howell, R. A. (2021). Engaging students in education for sustainable development: The benefits of active learning, reflective practices and flipped classroom pedagogies. *Journal of Cleaner Production*, 325(November). <https://doi.org/10.1016/j.jclepro.2021.129318>
- Karvonen, R. (2026). Rethinking transformations in sustainability education: project-based approach to sustainability for primary school student teachers. *International Journal of Sustainability in Higher Education*, 27(10), 17–36. <https://doi.org/10.1108/IJSHE-03-2025-0204>
- Kiai, U. I. N., Achmad, H., Kiai, U. I. N., Achmad, H., Kiai, U. I. N., & Achmad, H. (n.d). INTERNALIZATION OF RELIGIOUS MODERATION VALUES: ACTIVE TOLERANCE AND SOCIAL HARMONY IN EDUCATION IN INDONESIA Akhmad Munir Mufi Aminullah Elhady Mursalim Education is a purposeful and deliberate effort aimed at establishing a conducive environment and le. 1–32.
- Lim, C. K., Haufiku, M. S., Tan, K. L., Farid Ahmed, M., & Ng, T. F. (2022). Systematic Review of Education Sustainable Development in Higher Education Institutions. *Sustainability*, 14(20), 13241. <https://doi.org/10.3390/su142013241>
- Mbah, M. F., Clifton, N., & Kushnir, I. (2024). Internationalising higher education curricula for sustainable development: considerations for indigeneity and (inter)culturality. *Discover Sustainability*, 5(1), 307. <https://doi.org/10.1007/s43621-024-00520-y>
- Nasir, M., & Rijal, M. K. (2021). Keeping the middle path: mainstreaming religious moderation through Islamic higher education institutions in Indonesia. *Indonesian Journal of Islam and Muslim Societies*, 11(2), 213–241. <https://doi.org/10.18326/ijims.v11i2.213-241>
- Rajabifard, A., Kahalimoghadam, M., Lumantarna, E., Herath, N., Hui, F. K. P., & Assarkhaniki, Z. (2021). Applying SDGs as a systematic approach for incorporating sustainability in higher education. *International Journal of Sustainability in Higher Education*, 22(6), 1266–1284. <https://doi.org/10.1108/IJSHE-10-2020-0418>
- Somasundaram, M., Latha, P., & Pandian, S. A. S. (2020). Curriculum Design Using Artificial Intelligence (AI) Back Propagation Method. *Procedia Computer Science*, 172(2019), 134–138. <https://doi.org/10.1016/j.procs.2020.05.020>
- Subaidi, Tantowi, A., Cholid, N., Junaedi, M., Waluyo, & Nursikin, M. (2023). Eco-pesantren: Islamic Education in Forest Conservation Landscapes. *Fudan Journal of the Humanities and Social Sciences*, 16(4), 541–567. <https://doi.org/10.1007/s40647-023-00386-w>
- Viera Trevisan, L., Leal Filho, W., & Ávila Pedrozo, E. (2024). Transformative organisational learning for sustainability in higher education: A literature review and an international multi-case study. *Journal of Cleaner Production*, 447(March), 141634. <https://doi.org/10.1016/j.jclepro.2024.141634>