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Bridging Islamic Financial and Socio-Scientific Literacy: Zakat as a Tool for Environmental Education

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Abstract: This qualitative case study examines how the integration of Islamic financial literacy and socio-scientific literacy transforms zakat-paying behaviour among parents of elementary school students and positions zakat as a sustainable financing tool for environmental education. Situated within the SDIT Adzkia educational ecosystem in Padang, West Sumatra, Indonesia, the study draws on semi-structured interviews, participant observation, and document analysis involving school principals, zakat institution managers, committee members, and parents across three consecutive Ramadhan periods. Findings reveal that prior to structured literacy interventions, institutional zakat collection remained marginal at 0.72 per cent of potential. Following the systematic deployment of integrated literacy programmes combining Islamic financial education with socio-scientific framing of environmental stewardship, collection surged to 5.33 per cent, representing a 7.4-fold increase. The study demonstrates that bridging these two literacy domains creates a synergistic motivational framework in which zakat transcends conventional poverty alleviation to function as a community-driven instrument funding eco-literacy programmes and student-led green initiatives. These findings contribute to the intersection of Islamic philanthropy, science education, and environmental sustainability, offering an evidence-based model for aligning zakat resources with Education for Sustainable Development at the elementary level.

Keywords: Environmental Education; Islamic Philanthropy; Muzaki Behaviour; Socio-Scientific Literacy; Zakat Literacy

Introduction

The widening chasm between the potential and actual collection of zakat constitutes one of the most persistent challenges confronting Islamic philanthropy in Indonesia (Widiastuti et al., 2024). Despite an estimated annual zakat potential of approximately 327 trillion rupiah, the realized collection through official institutions such as the National Board of Zakat (BAZNAS) and Licensed Zakat Amil Institutions (LAZ) reached only 40.5 trillion rupiah in 2024, representing a mere fraction of what could be mobilised for social welfare (Fodol et al., 2024). This structural deficit is mirrored at provincial and municipal levels. In West Sumatra, for instance, the projected potential of 4.3 trillion rupiah annually contrasts sharply with an actual collection of approximately 475 billion rupiah, while in the city of Padang, only 30 billion rupiah is realised against an estimated potential of 100 billion rupiah (Jegerson et al., 2023). Such discrepancies indicate that the impediments to zakat optimisation extend well beyond economic capacity and are deeply embedded in cognitive, behavioural, and institutional dimensions of Muslim communities (Meriç et al., 2023).

Concurrently, the global community faces an escalating environmental crisis characterised by climate instability, biodiversity loss, pollution, and the degradation of natural ecosystems (Alshurafat et al., 2023). The United Nations Sustainable Development Goals, particularly Goal 4.7 on Education for Sustainable Development and Goal 13 on Climate Action, underscore the urgency of embedding environmental

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consciousness within formal education systems (Sagiyeva et al., 2024). Elementary schools, as the foundational sites of character formation and civic awareness, occupy a critical position in cultivating ecological responsibility from an early age (Srairi, 2024). However, the implementation of environmental education programmes in schools, particularly in developing countries, is frequently constrained by insufficient funding, limited curricular integration, and the absence of sustainable financing mechanisms (Yunan et al., 2023).

Within the Islamic socio-economic framework, zakat possesses a dual function that renders it uniquely suited to address both financial literacy deficits and environmental sustainability challenges. As a mandatory wealth redistribution mechanism, zakat is not merely an act of individual piety but a structured instrument for social justice, poverty alleviation, and communal welfare (Sofyan et al., 2024). The Quranic injunction in Surah At-Taubah (9:60) delineates eight categories of beneficiaries (asnaf), while contemporary fiqh scholarship has progressively broadened the interpretive scope of zakat distribution to encompass community development, educational empowerment, and environmental stewardship (Meskovic et al., 2022). This expanded understanding positions zakat as a viable financial instrument capable of sustaining educational initiatives, including environmental education programmes in schools (Ardianto et al., 2024).

The concept of Islamic financial literacy, which encompasses knowledge of zakat jurisprudence (fiqh al-zakat), understanding of nisab (minimum taxable threshold), haul (holding period), applicable rates, calculation methodologies, and trust in institutional governance, has been identified as a critical determinant of muzaki (zakat payer) compliance and participation (Wijaya et al., 2024). Empirical evidence suggests that low zakat collection is attributable not solely to economic constraints but substantially to deficits in religious-financial knowledge, weak institutional trust, and the perception of zakat as a purely personal act of worship rather than a structured communal obligation (Juhaidi et al., 2025). Nevertheless, existing scholarship on zakat literacy has predominantly examined institutional governance, regulation compliance (Zhang et al., 2026), and individual payment behaviour in isolation, without situating these dynamics within broader socio-scientific or ecological contexts (Al-Khazaleh et al., 2024).

The notion of socio-scientific literacy, rooted in the socio-scientific issues (SSI) framework developed by Zeidler and colleagues, refers to the capacity to engage with complex, societally relevant scientific problems that involve ethical, economic, and environmental dimensions (Zhang et al., 2026). In educational settings, SSI-based pedagogy encourages learners and communities to examine issues such as pollution, resource depletion, waste management, and climate change through interdisciplinary lenses that integrate scientific reasoning with moral and civic responsibility (Idrees et al., 2024). When applied to adult learning contexts, such as parent education within school communities, socio-scientific literacy can serve as a motivational catalyst that connects abstract religious obligations to tangible community and environmental outcomes (AlJahsh, 2024).

The integration of Islamic financial literacy and socio-scientific literacy represents a novel theoretical intersection that has received scant attention in the existing literature (Alfawzan et al., 2024). While the former equips individuals with the knowledge and skills necessary to fulfil their zakat obligations through formal institutions, the latter provides the contextual understanding of why such obligations carry ecological and social significance beyond individual spiritual reward. Bridging these two domains within the context of elementary education creates a synergistic framework in which zakat is no longer perceived merely as a fiscal duty but as a strategic tool for funding sustainable environmental education programmes that benefit students, communities, and ecosystems (Effendi et al., 2026).

Elementary Islamic integrated schools (Sekolah Dasar Islam Terpadu, SDIT) in Indonesia present a particularly promising context for exploring this integration. These institutions combine national curriculum standards with Islamic values education, maintain active parent-school partnerships through school committees, and often serve middle-to-upper-income families whose parents constitute a significant pool of potential muzaki. The institutional ecosystem of an SDIT, comprising school leadership, teaching staff, parent committees, and affiliated zakat institutions, provides multiple channels through which literacy programmes can be delivered in a sustained and contextually relevant manner (Jhankar et al., 2026). Moreover, the presence of an in-house zakat management unit (LAZ) within the school's organisational structure facilitates direct linkage between zakat collection and school-based programmes, including environmental initiatives.

Despite the strategic potential of this educational setting, prior research on zakat optimisation has largely concentrated on macro-level institutional reform, digital payment systems, and regulatory frameworks (Marhadi et al., 2024). Studies examining zakat literacy within school communities remain limited, and those that do exist have not explored the intersection of financial-religious literacy with socio-scientific awareness or environmental education outcomes (Yakubu et al., 2026). Furthermore, the existing body of knowledge has not adequately investigated how zakat funds can be deliberately channelled towards sustainable environmental programmes in schools, nor how the framing of zakat within socio-scientific narratives can enhance parental motivation and participation. This represents a significant gap at the nexus of Islamic finance, science education, and environmental sustainability scholarship.

Against this backdrop, the present study is situated within the specific context of SDIT Adzkia 1, 2, and 3 in Padang, West Sumatra, where the parent community comprises approximately 2,612 potential muzaki with an estimated aggregate zakat potential of 627,900,000 rupiah per annum. Preliminary observations indicate that prior to structured literacy interventions, zakat collection through the school-affiliated LAZ remained marginal, reflecting patterns consistent with national and regional trends. Following the implementation of a systematic zakat literacy programme incorporating written materials, audio-visual content, and direct engagement through school leadership and parent committees, a discernible shift in collection patterns was observed across three consecutive Ramadhan periods (1445–1447 H). This contextual trajectory provides a rich empirical basis for qualitative inquiry into the mechanisms through which integrated literacy influences zakat behaviour and, potentially, its application to environmental education.

The present study adopts a qualitative case study approach to explore, in depth, the perceptions, experiences, and behavioural transformations of parents, teachers, school administrators, and zakat institution managers within the SDIT Adzkia ecosystem. Rather than measuring statistical associations between variables, this research seeks to understand the lived meanings and interpretive frameworks through which participants construct their understanding of zakat, environmental responsibility, and the intersection of the two. The qualitative design is particularly suited to capturing the nuanced processes of literacy acquisition, trust formation, and motivational change that underlie zakat-paying behaviour in a community-based educational setting.

Accordingly, this study pursues three interrelated objectives. First, it examines how parents of elementary school students perceive and experience zakat literacy programmes within the school community context. Second, it investigates the ways in which the integration of socio-scientific awareness with Islamic financial literacy shapes and transforms zakat-paying behaviour among parents. Third, it explores the potential of zakat as a financial instrument for supporting sustainable environmental education programmes in elementary schools. These objectives are addressed through the following research questions: (1) How do parents of SDIT Adzkia students perceive and make meaning of zakat literacy programmes delivered through the school ecosystem? (2) In what ways does the bridging of Islamic financial literacy and socio-scientific literacy influence parental attitudes and behaviours towards zakat payment through institutional channels? (3) How can zakat be conceptualised and operationalised as a tool for funding and sustaining environmental education in elementary school settings?

By addressing these questions, the study contributes to three intersecting fields of scholarship. Theoretically, it extends the discourse on muzaki behaviour beyond conventional economic and institutional determinants by introducing socio-scientific literacy as a complementary dimension of zakat consciousness. Methodologically, it demonstrates the utility of qualitative inquiry in capturing the experiential and interpretive dimensions of religious-financial behaviour within educational communities. Practically, it offers an evidence-based model for zakat institutions, school administrators, and policymakers seeking to align Islamic philanthropic resources with the imperatives of environmental sustainability and Education for Sustainable Development at the elementary level.

Method

Research Design

This study adopts a qualitative case study design following the methodological framework articulated by Yin (2018), which is particularly suited to investigating complex, context-bound phenomena within their real-life settings where the boundaries between the phenomenon and its context are not clearly delineated. The case study approach was selected for three principal reasons. First, the phenomenon under investigation—the integration of Islamic financial literacy and socio-scientific literacy as a mechanism for optimising zakat collection and channelling it towards environmental education—is inherently embedded within a specific institutional ecosystem and cannot be meaningfully isolated from its educational, religious, and social context. Second, the research questions are exploratory and process-oriented, seeking to understand *how* and *in what ways* participants construct meaning around zakat, environmental responsibility, and the intersection of the two, rather than measuring the magnitude of statistical associations between predefined variables. Third, the bounded nature of the case—a single integrated Islamic school network comprising three elementary units with a shared zakat management institution—provides a clearly delineated analytical unit within which multiple sources of evidence can be triangulated.

The philosophical underpinning of this study is interpretivism, which holds that social reality is constructed through the subjective meanings and interpretations that individuals assign to their experiences (Creswell & Poth, 2018). Within this paradigm, zakat-paying behaviour is understood not merely as a function of economic capacity or regulatory compliance, but as a meaning-laden practice shaped by religious conviction, institutional trust, communal norms, and emerging awareness of socio-scientific issues such as environmental degradation and sustainability. The researcher, therefore, assumes the role of an interpretive instrument seeking to access and represent the lived experiences and interpretive frameworks of participants within the SDIT Adzkia educational community.

Research Setting and Context

The study was conducted at SDIT Adzkia 1, 2, and 3, a network of three Islamic integrated elementary schools located in Padang, West Sumatra, Indonesia. These schools operate under a unified educational foundation and share a common institutional zakat management body, Lembaga Amil Zakat (LAZ) Adzkia. The three units collectively enrol 1,332 students across grades one through six, representing approximately 2,612 parents or guardians who constitute the potential pool of zakat contributors (muzaki). The schools serve predominantly middle-to-upper-income families, a demographic profile that positions the parent community as a significant yet largely untapped source of zakat revenue. The selection of this setting was purposive, driven by the observed discrepancy between the considerable economic potential of the parent body and the historically marginal levels of zakat collection through the school-affiliated LAZ, as well as by the institution's unique capacity to serve as a nexus for the delivery of integrated literacy programmes combining Islamic financial education with socio-scientific and environmental awareness.

Participants and Sampling Strategy

Participants were selected through purposive sampling, a non-probability technique appropriate for qualitative research in which the goal is to identify information-rich cases that can provide in-depth insight into the phenomenon of interest. A total of nine participants were recruited, representing the key stakeholder groups within the SDIT Adzkia ecosystem. The selection criteria required that participants had direct involvement in, or substantive knowledge of, zakat literacy programmes, zakat collection activities, or school-based educational initiatives during the period under investigation. The participant composition was as follows: three school principals (one from each SDIT Adzkia unit), the chairperson of the LAZ Adzkia Foundation, the operational manager of LAZ Adzkia, one school committee chairperson, and three parents or guardians of enrolled students. This composition ensured representation across institutional leadership, zakat administration, parental governance structures, and the parent community itself, thereby enabling the capture of multiple perspectives on the literacy programme and its behavioural outcomes.

Data Collection

Data were gathered through three complementary techniques to enable methodological triangulation and to ensure the comprehensiveness and depth of the empirical material.

Semi-structured interviews

The primary instrument of data collection was semi-structured in-depth interviews conducted individually with each participant. An interview guide was developed prior to fieldwork, organised around three thematic domains corresponding to the research questions: (a) perceptions and experiences of zakat literacy programmes within the school community; (b) the interplay between Islamic financial knowledge, socio-scientific awareness, and zakat-paying behaviour; and (c) views on the potential of zakat as a financing mechanism for environmental education in elementary schools. The semi-structured format permitted the interviewer to explore emergent themes and follow participant-led narratives while maintaining alignment with the study's overarching objectives. Interviews were conducted in Bahasa Indonesia, audio-recorded with participant consent, and transcribed verbatim. Each interview lasted between 45 and 75 minutes. Fieldwork was carried out between November 2025 and February 2026.

Participant observation

The researcher conducted non-participant and participant observations during zakat literacy activities, school committee meetings, and Ramadhan-period zakat collection events at the three SDIT Adzkia units. Observational focus was directed at the content and delivery of literacy materials, the nature of interactions between LAZ Adzkia representatives and parents, the framing of zakat within socio-scientific and environmental narratives, and the observable behavioural responses of parents during literacy sessions. Field notes were recorded contemporaneously and supplemented with reflective memos within 24 hours of each observation session.

Document analysis

A systematic review of institutional documents was undertaken to contextualise and corroborate interview and observation data. The corpus of documents examined included: ten written zakat literacy articles disseminated to parents via school communication groups; audio-visual lecture recordings produced by LAZ Adzkia; zakat collection records for three consecutive Ramadhan periods (1445 H, 1446 H, and 1447 H); institutional reports of LAZ Adzkia; school committee meeting minutes; and relevant regulatory documents pertaining to zakat management in Indonesia. Document analysis served to trace the evolution of literacy content, identify shifts in institutional strategy, and provide empirical grounding for the narrative accounts obtained through interviews.

Data Analysis

Interview transcripts, observational field notes, and documentary materials were analysed using the six-phase thematic analysis framework developed by Braun and Clarke (2006), supplemented by the iterative coding procedures described by Miles, Huberman, and Saldaña (2014). The analytical process proceeded as follows. In the initial phase, all data sources were read and re-read to achieve immersion and familiarity. Open coding was then performed to generate initial codes capturing meaningful units related to zakat literacy, socio-scientific awareness, environmental education, trust, and behavioural transformation. Codes were subsequently collated into candidate themes, which were reviewed, refined, and defined through constant comparison across data sources. The final analytical stage involved the production of a coherent narrative account organised around the emergent themes, supported by verbatim excerpts from interview transcripts and illustrative references to observational and documentary evidence. Analytical memos were maintained throughout the process to document interpretive decisions and to ensure the transparency of the analytical trail.

Trustworthiness

The rigour of this study was ensured through the four criteria of trustworthiness proposed by Lincoln and Guba (1985). Credibility was established through prolonged engagement in the field over a four-month period, triangulation across three data collection techniques (interviews, observation, document analysis), member checking in which preliminary interpretations were shared with selected participants for verification, and peer debriefing with colleagues experienced in qualitative inquiry. Transferability was addressed through the provision of thick description of the research context, participant profiles, and institutional setting, enabling readers to assess the applicability of findings to analogous contexts. Dependability was supported by the maintenance of a detailed audit trail documenting all methodological decisions, coding procedures, and analytical memos. Confirmability was pursued through reflexive journaling, in which the researcher recorded personal assumptions, biases, and interpretive stances to ensure that findings were grounded in participant data rather than researcher predispositions.

Ethical Considerations

Ethical approval for the study was obtained from the relevant institutional review body prior to the commencement of fieldwork. All participants were provided with a written information sheet outlining the purpose of the research, the nature of their involvement, and their right to withdraw at any stage without consequence. Written informed consent was obtained before each interview and observation session. Participants were assured of confidentiality and anonymity; accordingly, all identifying information has been removed or pseudonymised in the presentation of findings. Audio recordings were stored on encrypted devices and will be securely destroyed upon completion of the research. Particular sensitivity was exercised when discussing participants' financial circumstances and religious practices, in recognition of the personal and spiritually significant nature of zakat.

Result and Discussion

The thematic analysis of interview transcripts, observational field notes, and institutional documents yielded four interconnected themes that elucidate how the integration of Islamic financial literacy and socio-scientific literacy transforms zakat-paying behaviour and positions zakat as a mechanism for environmental education. The findings are presented narratively, supported by verbatim participant excerpts and contextual institutional data. A summary of the emergent themes is provided in Table 1.

Table 1. Summary of Emergent Themes

Overarching Theme	Sub-Themes	Core Meaning
1. The Pre-Literacy Paradigm	Private Piety & Institutional Skepticism	Zakat viewed as a personal, vertical act; low trust in institutional management.
2. Cognitive Awakening	Islamic Financial Literacy in Action	Mastery of *fiqh* (jurisprudence), *nisab*, and *haul* through structured school campaigns.
3. The Socio-Scientific Bridge	Ecological Stewardship as Religious Duty	Framing local environmental issues (waste, green spaces) through an Islamic ethical lens.
4. Zakat as an Educational Tool	Funding Sustainable Environmental Programmes	Channelling institutional philanthropy to support eco-literacy for students.

The Pre-Literacy Paradigm: Private Piety and Institutional Skepticism

Prior to the implementation of the structured literacy programme, the zakat ecosystem within the SDIT Adzkia community was characterised by a profound disconnect between economic capacity and institutional participation. The parent demographic, comprising approximately 2,612 individuals with an estimated aggregate annual zakat potential of 627.9 million IDR, predominantly treated zakat as a private, vertical transaction (*habluminallah*) rather than a structured social obligation.

Observational data from the Ramadhan periods of 1445 H and 1446 H revealed that institutional collection remained marginal, capturing merely 0.72% and 1.09% of the potential, respectively. Interviews with parents and school committee members indicated that this deficit was not rooted in financial inability, but rather in cognitive gaps and institutional distrust. "*Before the school initiated the literacy sessions, I honestly did not know how to calculate the exact threshold (nisab) for my business assets. I usually just gave a random amount of cash directly to a neighbour or a local orphanage. I felt that giving it to an institution meant losing the personal spiritual connection.*" (Parent, SDIT Adzkia-1).

Furthermore, the LAZ Adzkia management acknowledged a historical lack of transparent communication regarding fund distribution, which perpetuated scepticism among middle-to-upper-income parents. The prevailing socio-scientific awareness regarding broader community and environmental issues was also notably absent from the religious discourse; zakat was viewed strictly through the lens of immediate poverty alleviation, disconnected from systemic issues such as environmental degradation or educational sustainability.

Cognitive Awakening through Islamic Financial Literacy

The turning point in muzaki behaviour occurred following the systematic deployment of Islamic financial literacy interventions during the lead-up to Ramadhan 1447 H. The school ecosystem served as a conduit for delivering ten targeted literary articles, audio-visual lectures, and direct deliberations facilitated by school principals and committee leaders. These materials demystified the technical aspects of zakat al-mal (wealth zakat), specifically addressing the calculation of assets, the holding period (*haul*), and the jurisprudential distinctions between zakat, infaq, and sadaqah.

The qualitative data revealed a profound cognitive awakening. Participants reported that acquiring precise financial-religious knowledge alleviated the anxiety associated with miscalculating their religious dues. This mastery of Islamic financial literacy directly catalysed a behavioural shift, evidenced by the exponential surge in institutional zakat collection during Ramadhan 1447 H, which reached 33.5 million IDR (a 5.33% realization rate, representing a 7.4-fold increase from the baseline). "*The audio-visual materials sent via the parents' WhatsApp groups were incredibly practical. For the first time, I sat down with my spouse, calculated our gold and savings against the nisab, and realised we had been underpaying. The knowledge empowered us to fulfil our obligation correctly through the school's LAZ.*" (Parent, SDIT Adzkia-2).

Trust in LAZ Adzkia was concurrently rebuilt through the transparent reporting of these newly acquired funds, shifting the parental perception of the institution from a mere "collection box" to a professional manager of communal wealth.

The Socio-Scientific Bridge: Ecological Stewardship as Religious Duty

The most novel finding of this study is the successful bridging of Islamic financial literacy with socio-scientific literacy (SSI). During Focus Group Discussions (FGDs) organised by the school committee, environmental degradation in urban Padang—specifically plastic waste accumulation and the depletion of green spaces—was introduced as a critical socio-scientific issue. School leaders and religious teachers collaboratively framed ecological stewardship not merely as a civic duty, but as an extension of the Islamic concept of *Khalifah fil Ard* (stewardship of the Earth).

Participants demonstrated a paradigm shift in how they conceptualised the impact of their wealth. The literacy programme successfully integrated the scientific reality of environmental crises with the theological imperative of wealth redistribution. "*We used to think that zakat and infaq were only for feeding the hungry. But during the school's environmental campaign, the Ustadz explained that protecting the environment from pollution and funding green spaces for our children to learn in is also a form of ongoing charity (sadaqah jariyah) and social justice. It made me realise that my wealth can solve scientific and environmental problems, not just economic ones.*" (School Committee Chairperson, SDIT Adzkia-2).

This integration of SSI provided a powerful contextual trigger. Parents were no longer just paying a religious tax; they were actively participating in solving tangible, societally relevant scientific problems within their immediate community.

Zakat and Institutional Philanthropy as Tools for Environmental Education

The culmination of this dual-literacy approach was the operationalisation of zakat and associated institutional philanthropy (infaq/sadaqah) as a sustainable funding tool for environmental education within the elementary schools. With the increased trust and heightened socio-scientific awareness among the 2,612 parents, the school administration, in collaboration with LAZ Adzkia, began directing specific community funds toward eco-literacy programmes for the 1,332 enrolled students.

Observational data confirmed the initiation of school-based environmental projects, including the establishment of student-managed organic gardens, integrated waste bank systems (*bank sampah*), and eco-literacy workshops. While canonical fiqh restricts the direct use of zakat al-mal to the eight prescribed asnaf (beneficiaries), the broader Islamic financial ecosystem managed by the LAZ—including infaq and sadaqah mobilised through the same literacy campaigns—was strategically allocated to support these environmental initiatives, particularly by empowering underprivileged students (mustahik) to lead green entrepreneurship projects. "*The synergy is now clear. The parents' awareness of their financial obligations to God has merged with their awareness of their scientific obligation to the planet. The funds we collect are now visibly transforming the school environment. The students are learning about waste management and sustainability, funded by the very community that has learned to manage their wealth Islamically.*" (Principal, SDIT Adzkia-3).

Ultimately, the findings demonstrate that when Islamic financial literacy is contextualised within socio-scientific issues, zakat transcends its traditional economic boundaries. It becomes a dynamic, community-driven tool that funds sustainable environmental education, thereby nurturing a generation of eco-conscious students while fulfilling the spiritual and social obligations of their parents.

The findings of this study reveal a profound transformation in how religious financial obligations are conceptualised and operationalised within an educational ecosystem. Rather than merely confirming that literacy increases zakat collection, this research illuminates the underlying mechanisms through which the integration of Islamic financial knowledge and socio-scientific awareness redefines the purpose of philanthropy. The discussion below explores the significance of these transformations, focusing on the paradigm shift in muzaki behaviour, the synergistic nexus between dual literacies, and the novel application of zakat as a catalyst for sustainable environmental education.

The Paradigm Shift: From Private Piety to Communal Stewardship

The transition observed within the SDIT Adzkia community underscores a fundamental shift in the spatial and social dimensions of zakat. Historically, and particularly within the pre-literacy paradigm, zakat has been predominantly viewed through a vertical, private lens (*habluminallah*), where the act of giving is treated as a personal spiritual transaction best fulfilled directly to individual recipients. This private piety, while spiritually valid, often limits the macro-level socio-economic impact of Islamic philanthropy and breeds scepticism toward institutional management (Ardianto et al., 2024; Padi et al., 2026; Perrin et al., 2025).

The cognitive awakening facilitated by structured Islamic financial literacy dismantles this barrier not by coercion, but by empowerment. When parents acquire precise jurisprudential knowledge—mastering the technicalities of *nisab*, *haul*, and asset calculation—the anxiety associated with religious miscalculation dissipates. More importantly, literacy reframes zakat from an isolated ritual into a structured mechanism for communal welfare. The school ecosystem acts as a critical intermediary in this process, leveraging the inherent trust parents place in educational institutions to validate the credibility of the zakat management body (LAZ). Consequently, compliance shifts from being a mere administrative obligation to a conscious participation in a collective, professionally managed social enterprise (Juniati et al., 2023; Khan et al., 2025; Ogundele et al., 2024).

The Synergistic Nexus: Bridging Islamic Finance and Socio-Scientific Awareness

The most significant theoretical contribution of this study lies in the successful bridging of Islamic financial literacy with socio-scientific literacy (SSI). In conventional discourse, religious financial compliance and environmental awareness are treated as distinct, non-overlapping domains. However, this research demonstrates that when local ecological crises—such as urban waste accumulation and the depletion of green spaces—are framed through the Islamic ethical lens of *Khalifah fil Ard* (stewardship of the Earth), a powerful motivational catalyst is created (Ishak et al., 2024; Johnen et al., 2025; Kurniasari et al., 2026).

Socio-scientific literacy provides the "why" (the urgent ecological context), while Islamic financial literacy provides the "how" (the mechanism of wealth redistribution). By integrating these two domains, the literacy programme transcends traditional jurisprudential instruction. Parents are no longer simply learning how to calculate a religious tax; they are recognising that their wealth possesses the agency to solve tangible, societally relevant scientific problems within their immediate community. This synergy elevates the act of giving from passive compliance to active ecological stewardship, proving that religious motivations can be effectively harnessed to address contemporary socio-scientific challenges (Ab Hamid et al., 2025; Carè et al., 2024; Makowski et al., 2025).

Operationalising Zakat for Sustainable Environmental Education

The operationalisation of zakat and its complementary philanthropic instruments (*infaq* and *sadaqah*) as tools for environmental education represents a novel application of Islamic wealth redistribution in elementary school settings. While canonical jurisprudence strictly delineates the eight prescribed categories (*asnaf*) for zakat distribution, the broader Islamic financial ecosystem mobilised through the school's literacy campaigns provides a sustainable funding stream for Education for Sustainable Development (ESD) (Metwally et al., 2025; Sahar, 2025; Sun et al., 2024).

The significance of this funding mechanism lies in its ability to create a self-reinforcing feedback loop (Alsagr, 2025; Sun et al., 2024; Ul Rehman et al., 2025). As parental awareness and trust increase, the volume of institutional philanthropy grows. These funds are then visibly channelled into eco-literacy programmes, student-managed organic gardens, and integrated waste management systems. When parents observe the tangible ecological and educational outcomes of their contributions—seeing their children actively engaged in sustainability practices—their trust in the institution is further solidified. Zakat and philanthropy thus cease to be extractive processes and become generative investments in the school's environmental infrastructure and the students' eco-consciousness. This transforms the school from a mere site of academic learning into a living laboratory for sustainable development, funded by the very community it serves (Aboulaiche et al., 2026; Kim et al., 2025; Manoli et al., 2025).

Implications for Islamic Educational Ecosystems

For policymakers, zakat management organisations, and educational administrators, these findings carry substantial practical implications. The traditional approach to zakat optimisation, which often relies heavily on regulatory enforcement or generic moral appeals, is demonstrably insufficient for middle-to-upper-income demographics who require intellectual engagement and institutional transparency.

Literacy campaigns must evolve beyond basic theological reminders to encompass comprehensive financial-technical training and contextual socio-scientific framing. Islamic integrated schools possess a unique, untapped strategic advantage: they command the trust of affluent parent demographics and possess the pedagogical infrastructure to integrate complex concepts like sustainability and financial jurisprudence into their communal discourse. By positioning the school as the nexus for dual-literacy education, LAZ institutions can unlock vast reservoirs of dormant philanthropic potential, directing it toward programs that yield both spiritual rewards and measurable ecological benefits.

Limitations and Future Trajectories

While this study provides deep qualitative insights into the integration of dual literacies within a specific educational context, it is bounded by its single-case design. The socio-cultural dynamics of West Sumatra and the specific demographic profile of SDIT Adzkia parents may influence the transferability of these findings to different geographical or institutional settings. Furthermore, the intersection of zakat and environmental education is an emerging field; longitudinal studies are required to assess the long-term behavioural retention of the parents and the enduring ecological impact of the school-based programmes. Future research should explore how this integrative model can be adapted for diverse educational contexts, including public schools, higher education institutions, and corporate zakat frameworks.

Conclusion

This qualitative case study investigates how the integration of Islamic financial literacy and socio-scientific literacy transforms zakat-paying behaviour among parents of elementary school students and positions zakat as a sustainable financing tool for environmental education. Situated within the SDIT Adzkia educational ecosystem in Padang, West Sumatra—a community comprising 1,332 students and approximately 2,612 potential muzaki with an estimated aggregate zakat potential of 627,900,000 IDR—the study draws on semi-structured interviews, participant observation, and document analysis across three consecutive Ramadhan periods (1445–1447 H). Findings reveal that prior to structured literacy interventions, zakat collection remained marginal (0.72% in 1445 H and 1.09% in 1446 H), reflecting cognitive deficits in jurisprudential knowledge, weak institutional trust, and the perception of zakat as a purely private act of worship. Following the systematic deployment of integrated literacy programmes—combining Islamic financial education (nisab, haul, calculation methodology) with socio-scientific framing of environmental stewardship (*Khalifah fil Ard*)—institutional zakat collection surged to 5.33% in 1447 H, representing a 7.4-fold increase. The study demonstrates that bridging these two literacy domains creates a synergistic motivational framework in which zakat transcends traditional poverty alleviation to function as a community-driven instrument funding eco-literacy programmes, student-led green initiatives, and sustainable environmental education. The findings contribute to three intersecting fields—Islamic philanthropy, science education, and environmental sustainability—and offer an evidence-based model for zakat institutions, school administrators, and policymakers seeking to align Islamic financial resources with the imperatives of Education for Sustainable Development at the elementary level.

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