# ECOLOGICAL LITERACY AND CURRICULUM INNOVATION FOR ENVIRONMENTAL SUSTAINABILITY AMONG SCHOOL LEADERS IN SHCJ SCHOOLS IN AFRICA

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## Abstract

*This study investigates how school leaders in Society of the Holy Child Jesus (SHCJ) schools across Africa interpret and implement ecological literacy within their institutions. Using a Grounded Theory approach, qualitative data were collected from 20 leaders in Nigeria, Ghana, Chad, and Kenya and analyzed through open, axial, and selective coding. Findings reveal that ecological literacy is widely valued but remains informally structured, often embedded within subjects such as Biology, Agricultural Science, and Geography rather than taught as a distinct curriculum area. Experiential practices, including recycling, tree planting, waste segregation, and Laudato Si clubs, enhance student engagement, yet systemic challenges such as behavioral resistance, limited parental involvement, and lack of institutional support constrain impact. A core category, Ecological Literacy as Negotiated Transformative Practice, emerged, highlighting the tension between teacher-driven innovation and the absence of formal curriculum frameworks. Beyond the school context, ecological literacy is linked to broader sustainability challenges in Africa, including biodiversity loss, deforestation, and waste-related public health risks. The study concludes that effective ecological education requires alignment between curriculum structures, teacher agency, and community participation. By situating ecological literacy within faith-based education, this research contributes a practice-based understanding of how leadership can drive curriculum innovation for sustainability and public health resilience in resource-constrained contexts.*

**Keywords:** ecological literacy, curriculum innovation, environmental education, school leadership, faith-based education, sustainability, biodiversity, public health

## Introduction

Globally, humanity is battling with increasing environmental challenges and the demand for sustainable development. Schools are positioned as critical spaces for cultivating ecological consciousness. International bodies like UNESCO emphasize the role of education in promoting sustainable development and responsible citizenship which has resulted in ecological literacy emerging as an essential component of modern education. School leaders, play a central role in translating these ideals into practice through curriculum innovation and leadership.

Schools affiliated with the Society of the Holy Child Jesus (SHCJ) combine a faith-based commitment to holistic formation with a mission orientation that can support values-based sustainability education. The SHCJ's emphasis on moral formation, community service, and care for creation aligns closely with UNESCO's ESD principles and Pope Francis's call for an ecological conversion in Laudato Si'. Within SHCJ schools, ecological literacy can therefore be framed not only as scientific knowledge but as an ethical and spiritual responsibility which provides a critical opportunity for integrating values, experiential practice, and community outreach. Examining SHCJ leaders' approaches offers insight into how faith-based missions can enable or constrain curriculum innovation for sustainability in resource-constrained African settings.

**Research Questions:**

i. How do school leaders in SHCJ schools in Africa understand and interpret ecological literacy?
ii. In what ways is ecological literacy integrated into curriculum innovation and everyday school practices in SHCJ schools in Africa?
iii. What factors, challenges, and leadership strategies influence the implementation of curriculum innovations in SHCJ schools in Africa?

**Review of Related Literature**

Education, with faith-based institutions, particularly Catholic schooling, emphasizes holistic formation by integrating intellectual growth with moral, spiritual, and social values. Its mission is to produce individuals who are intellectually competent, morally grounded, and socially responsible (Congregation for Catholic Education, 2014). In Africa, education is widely regarded as a transformative tool for personal and societal development, with faith-based schools playing a critical role in shaping values and promoting social justice (Oduro, 2015). This aligns with the mission of religious institutes such as the Society of the Holy Child Jesus, which prioritize education as empowerment and service.

Ecological literacy, defined as the ability to understand natural systems and make informed decisions for sustainability (Capra, 1996), has become central to Education for Sustainable Development (ESD). It encompasses knowledge, values, and behaviors that foster stewardship and sustainable practices (Ogunyemi & Ifegbesan, 2011). Research shows that environmental education strengthens emotional bonds with nature, empathy for ecosystems, and willingness to protect them (Ekwesaranna et al., 2025). Within Catholic education, ecological literacy is strongly influenced by *Laudato Si'*, which calls for ecological conversion and emphasizes the moral responsibility to care for creation (Pope Francis, 2015). UNESCO's Global Action Programme further highlights ESD as transformative education for advancing sustainability worldwide (UNESCO, 2017).

Curriculum innovation and school leadership are critical for embedding ecological literacy into education. Innovative curricula integrate experiential learning, critical thinking, and cross-disciplinary approaches (Tilbury, 2011; Fullan, 2007), but implementation in African schools faces barriers such as scarce resources, limited teacher training, and rigid policy frameworks (Ogunyemi, 2018). Effective leadership drives cultural change, motivates teachers, and sustains innovation, making schools vital platforms for fostering sustainability amid deforestation, pollution, and climate change (Lotz-Sisitka et al., 2015; Ibada, 2025). Faith-based schools, by combining ecological values with moral and spiritual teachings, can bridge gaps in policy and practice, embedding sustainability early in life and positioning themselves as important actors in advancing ecological education across Africa (Agbor et al., 2025).

## Research Methodology

This study adopted a qualitative research design using the Grounded Theory approach developed by Glaser and Strauss (1967), which is appropriate for generating theory grounded in participants' experiences rather than testing pre-existing hypotheses. The method enabled an in-depth exploration of how school leaders understand and implement ecological literacy within their curriculum, while identifying processes and constraints shaping these practices. Participants included 20 out of 42 heads of SHCJ-affiliated schools across Africa (Nigeria, Chad, Ghana, and Kenya) who volunteered to take part. Since 20 is only 47% of the population, it means that the results from this study may not be generalized to related settings and contexts. The interviews took a period of 6 weeks and data was collected through online Google Forms with eight open-ended questions exploring ecological literacy, curriculum presence, teaching practices, student responses, challenges, and recommendations. These questions were validated through experts' review and cognitive pre-testing. The data and interpretations also went through member-checking.

Data analysis followed the Grounded Theory coding process, involving simultaneous data collection and analysis, constant comparison, and progressive coding (open, axial, and selective) until theoretical saturation was achieved (Corbin & Strauss, 2015; Charmaz, 2014). Open coding identified initial categories, axial coding explored relationships among them, and selective coding integrated these around a central phenomenon. Trustworthiness was ensured through triangulation across countries, member checking with respondents, and reflexivity via analytic memos. Ethical approval was obtained from the Institute of Leadership and Management, Uromi, Nigeria (INSTILM-IRB/2025/ENV-001), with voluntary participation, anonymity, and secure data storage guaranteed. All information was used strictly for academic purposes, safeguarding participant rights while advancing scholarly discourse and educational practice.

**Results**
**Table 1**

| S/NO | Date of Interview | Status | Age | Gender | Location |
|---|---|---|---|---|---|
| 1 | 02/02/2026 | Principal | 51–60 | Female | Anambra |
| 2 | 02/02/2026 | Head Teacher | 51–60 | Female | Rivers |
| 3 | 03/02/2026 | Vice Principal | 41–50 | Female | Abuja |
| 4 | 04/03/2026 | Principal | 41–50 | Female | Ogun |
| 5 | 05/02/2026 | Principal | 51–60 | Female | Kogi |
| 6 | 07/02/2026 | Principal | 41–50 | Female | Ogun |
| 7 | 08/02/2026 | Principal | 41–50 | Female | Benue |
| 8 | 12/02/2026 | Head Teacher | 41–50 | Female | Kenya |
| 9 | 13/02/1026 | Principal | 51–60 | Female | Cross River |
| 10 | 15/02/2026 | Vice Principal | 41–50 | Female | Rivers |
| 11 | 18/02/2026 | Vice Principal | 51–60 | Female | Benue State |
| 12 | 20/02/2026 | Vice Principal | 51–60 | Female | Ghana |
| 13 | 24/02/2026 | Head Teacher | 41–50 | Female | Chad |
| 14 | 27/02/2026 | Vice Principal | 51–60 | Female | Anambra |
| 15 | 4/03/2026 | Head Teacher | 41–50 | Female | Lagos |
| 16 | 6/03/2026 | Principal | 41–50 | Female | Abuja |
| 17 | 9/03/2026 | Head Teacher | 41–50 | Female | Ghana |
| 18 | 12/03/2026 | Vice Principal | 51–60 | Female | Kogi |
| 19 | 14/03/2026 | Principal | 41–50 | Female | Delta |
| 20 | 16/03/2026 | Head Teacher | 31–40 | Female | Delta |

From Table 1, the demographics reveal that majority of respondents are senior educators (41–60 years), suggesting ecological literacy initiatives are being driven by experienced professionals. There is also Nigeria cross-country responses and a wider African perspective. The equal representation of Principals and Vice Principals, indicates balanced leadership involvement. Overall, ecological literacy and curriculum innovation in SHCJ African schools are being championed by experienced female leaders, with Nigeria at the forefront but supported by regional collaboration.

**Table 2**
***Full Thematic Table***

| Theme | Category | Illustrative Evidence |
|---|---|---|
| **Environmental Education is Valued but Informally Structured** | Curriculum presence & gaps | "It is not a subject in my school… taught aspects of ecology in the sciences." |
| | Integration & need for formalization | "The study of Biology, Agricultural Science and Geography takes care of it." / "Ensure the topic is included in your school timetable at least one period in a week." |
| **Early Environmental Awareness Builds Values** | Human–nature relationship & ethics | "Understanding the relationship between human beings and nature." / "Students learn to value life and creatures." |
| **Experiential Learning Drives Engagement** | Practical & creative pedagogy | "Making good use of plastic bags… making bangles." / "Practical applications by both teachers and students." |
| **Student Engagement is Positive but Gradual** | Attitudes & behavioral outcomes | "Students are very eager about this." / "Students are responsible for keeping the environment clean." |
| **Barriers Limit Impact** | Resistance & parental influence | "Students struggle to keep environment clean." / "Parents still bring single-use plastics to school." |
| **Innovation is Teacher-Driven but Needs Support** | Teacher initiatives & institutional dependency | "New ideas, concepts and techniques in teaching and learning." / "It will support us if it is properly planned and integrated." |
| **Whole-Community Approach is Necessary** | School practices & community involvement | "Single-use plastics are prohibited in our school." / "Educate parents so learners continue it at home." |
| **Need for Curriculum Reform** | Policy & co-curricular strategies | "Include in timetable at least one period a week." / "Introduce eco-friendly clubs and projects." |

Table 2 presents selected excerpts from participants alongside their corresponding codes. The coding process revealed recurring patterns related to environmental awareness, experiential learning practices, and challenges such as resistance and lack of parental involvement.

**Grounded Theory Analysis of the Data**

Data analysis used a Grounded Theory approach starting with open coding, axial coding, and selective coding. Through constant comparison, categories and patterns of meaning were refined and integrated into broader themes, leading to the emergence of a core category that explains the phenomenon under study enabling the researcher to construct an understanding of school leaders experience with ecological literacy and environmental education. The analysis points to the fact that 9 in 10 respondents value ecological literacy and environmental education. The study also noted that the implementation of reforms remains largely informal, fragmented, and dependent on school leaders and teacher initiative. The findings also reveal tensions between enthusiasm for environmental sustainability and structural limitations such as curriculum gaps, inadequate institutional support, resistance to behavioral change, and limited parental awareness.

**Environmental Education is Valued but Informally Structured:** This study reveals that environmental education is valued but informally structured, with 9 in 10 respondents consistently noting its importance yet acknowledging its lack of formal recognition in the curriculum. As one explained, "It is not a subject in my school… taught aspects of ecology in the sciences" (R1), while another emphasized that "curriculum design supports ecological literacy by integrating environmental care into all subjects and daily learning. Learners study nature in Science, apply measurement and data in Mathematics, and learn stewardship values in Religious Education" (R8). Similarly, "It is always talked about but not a subject" (R2), and "The study of Biology, Agricultural Science and Geography takes care of it" (R3), highlighting reliance on subject integration rather than dedicated structures. Leaders expressed a desire for institutional formalization, with one recommending, "Ensure the topic is included in your school timetable at least one period in a week" (R2). Collectively, these responses point to the broader theoretical proposition that ecological literacy in schools is valued but structurally underdeveloped.

**Strong Belief in Early Environmental Awareness:** This study highlights a strong belief in early environmental awareness, with respondents consistently emphasizing that ecological education should begin in primary school to shape long-term attitudes, ethical values, and responsible citizenship. Teachers associated ecological literacy with empathy, moral consciousness, and sustainability, noting that "Their awareness and concern for the environment will make them empathetic" (R13) and stressing the importance of "Understanding the relationship between human beings and nature" (R1). Others linked ecological literacy to ethical development and stewardship, stating, "Students learn to value life and creatures" (R3, R8). Recurring terms such as "awareness," "empathy," "respect," and "responsibility" produced the subcategory of environmental ethics, with participants viewing ecological literacy as both cognitive and moral education. Collectively, these insights suggest that exposing learners to ecological concepts early cultivates ecological identities and transforms passive awareness into active stewardship.

**Experiential Learning Drives Engagement:** This study shows that experiential learning drives engagement, as 7 in 10 respondents emphasized that hands-on activities such as recycling, waste segregation, composting, and creative reuse projects make ecological literacy meaningful. For example, one noted, "Making good use of plastic bags… making bangles" (R1), while another explained, "We separate biodegradable and non-biodegradable waste" (R2). Practical application was repeatedly described as central to learning "Practical applications by both teachers and students" (R6) and creativity was highlighted through "Creative ways of students learning about Mother Earth" (R3). These insights produced the categories of applied environmental learning, hands-on pedagogy, and creative ecological pedagogy, showing that interactive, student-centered methods transform abstract concepts into engaging, memorable, and behaviorally transformative practices.

**Positive but Gradual Student Engagement:** This study found that students were generally positive about ecological literacy initiatives, showing eagerness and cooperation even though behavioral transformation remains gradual. Respondents noted, "Students are very eager about this" (R1), "Teachers and students responded very well; they are cooperative" (R2), and "Students are responsible for keeping the environment clean" (R3), though some admitted, "Students struggle to keep environment clean" (R10). These insights produced the category of gradual behavioral transition, reflecting that while ecological education fosters enthusiasm and participation, translating awareness into consistent responsibility requires sustained reinforcement and long-term support.

**Behavioral and Social Barriers Limit Impact:** This study found that behavioral and social barriers limit the impact of ecological literacy initiatives, as respondents highlighted poor environmental habits and resistance to change. For instance, "Students struggle to keep environment clean" (R3) and "There was skepticism especially using plastics for ornamentals" (R1), reflecting behavioral resistance rooted in unsustainable practices. Community inconsistency also emerged, with one respondent noting, "Parents still bring single-use plastics to school" (R1), showing that ecological values taught in schools are not always reinforced at home. These insights underscore that ecological literacy is constrained not only by curriculum gaps but also by sociocultural attitudes and habits, suggesting that meaningful progress requires collective reinforcement of sustainable behaviors by schools, families, and communities.

**Innovation is School-Driven but Needs Institutional Support:** This study found that innovation in ecological literacy is largely school-driven, with teachers and leaders sustaining initiatives through creativity and commitment rather than systemic support. Respondents described efforts such as, "We tried to repair our roads in the compound with sand bags… to break erosion and prevent further soils being eroded" (R5), and "We have club fare days where clubs like Laudato Si have an opportunity to educate others on the care of the earth and environment" (R7), alongside "Doing Laudato Si education

awareness on environmental issues" (R12). While these examples highlight school-led innovation, challenges remain, as noted: "It wasn't easy teaching the students" (R1) and "The students are ignorant about a lot" (R4). These insights generated the categories of school-led innovation and institutional dependency, underscoring that without formal curriculum guidance and structured planning, sustainability efforts risk becoming inconsistent and unsustainable.

**Whole-Community Approach is Necessary:** This study highlights that a whole-community approach is necessary, as respondents emphasized ecological literacy must extend beyond classrooms to include families and communities. One explained, "Educate parents so learners continue it at home" (R2), while another urged, "Do a research on ecological literacy" (R13). Peer learning also emerged, with "Learners practise it and pass it on to others" (R2), generating the subcategory of knowledge transfer and social influence. Respondents viewed students as environmental ambassadors capable of spreading awareness, but stressed that lasting impact requires cooperation among schools, families, and communities. Collectively, these insights point to ecological literacy as a community-centered process built on shared responsibility.

**Need for Curriculum Reform and Strategic Implementation:** The final major theme emerging from the grounded theory analysis concerned the urgent need for curriculum reform and systematic implementation strategies. 7 in 10 respondents advocated for formal curriculum inclusion: "Include in timetable at least one period a week." (R2). Others emphasized collaboration with students: "Brainstorm on what you need the students to learn; plan the best way they will learn it and factor it into the curriculum." (R3) and "inculcate ecological literacy in the curriculum" (R13). Through continuous comparison, these responses generated the category of *institutionalization of ecological literacy*. Respondents believed environmental education should move from isolated activities toward structured educational policy.

The grounded theory analysis therefore suggests that participants view ecological literacy as a necessary educational reform area requiring curriculum restructuring, institutional commitment, and systematic implementation.

## Emerging Grounded Theory

Using the constant comparative method, an emergent theoretical explanation can be proposed from the findings. The data suggest that ecological literacy in schools develops through a dynamic interaction between teacher innovation, experiential learning practices, student engagement, and institutional support structures.

The emerging grounded theory proposes that:

> Ecological literacy is negotiated within structural constraints. However, ecological literacy becomes effective when experiential and value-

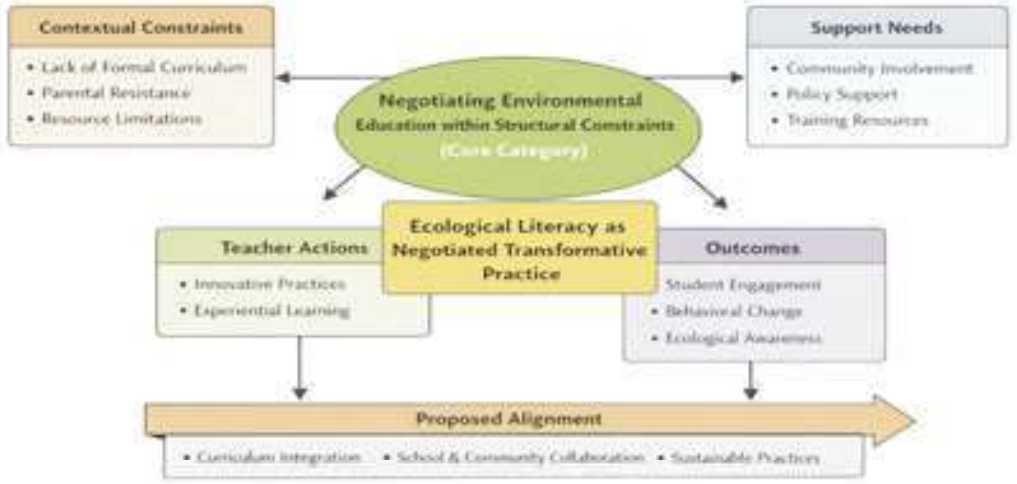
driven environmental learning is institutionally supported, community reinforced, and systematically integrated into the curriculum.

At the moment, ecological literacy remains dependent on fragmented subject integration. But it could more sustainable and transform the students' lives if there is collaboration and structured approaches involving teachers, students, parents, and policy frameworks. Therefore, our core emerging theory becomes: "Ecological Literacy as Negotiated Transformative Practice"

**Emerging Grounded Theory**

Figure 1

*Conceptual framework of the Study*




***Source**: Researcher's ideas generated with copilot.com*

**Discussion of the Emerging Theory**

The findings of this study reinforce existing scholarship that environmental education in Africa requires a holistic and systemic approach. Prior research in Nigeria emphasizes the importance of strong policies, curriculum integration, and community engagement to instil eco-friendly values (Ibaba, 2025), while Agbor et al. (2025) highlight experiential and interdisciplinary methods supported by teacher training and stakeholder collaboration. Kesuma (2024) noted that ecological literacy fosters environmentally caring behaviours essential for biodiversity conservation and sustainability, aligning with this study's observation that school leaders and teachers act as change agents through initiatives such as recycling, tree planting, and eco-clubs. Ekwesaranna et al. (2025) provide empirical evidence that structured environmental

education programs enhance connectedness to nature and foster pro-environmental behaviour, yet the absence of formal curriculum structures makes implementation inconsistent and dependent on individual effort. This reflects the Grounded Theory principle that social processes are shaped by the interaction of agency and structural constraints (Corbin & Strauss, 2015; Charmaz, 2014).

Beyond the school context, the emerging theory has wider implications for biodiversity, sustainability, and public health in Africa. Ecological literacy initiatives such as waste segregation, prohibition of single-use plastics, and tree planting directly contribute to biodiversity conservation and reduce ecosystem degradation. According to Irlam et al. (2023), ecological literacy also has direct public health implications, as environmental education reduces pollution-related illnesses and strengthens community resilience. By embedding ecological values early in education, schools foster stewardship that mitigates deforestation, habitat loss, and species decline, while addressing sustainability challenges such as climate change and resource depletion. The substantive theory that emerged—ecological literacy as a negotiated transformative process driven by innovation and experiential learning but constrained by informal structures and limited community involvement—underscores the need for systemic strategies that connect schools with families, policymakers, and communities. In doing so, ecological education can serve as a catalyst for biodiversity protection, sustainable development, and public health improvement across Africa.

**Recommendations from the Study**

**Curriculum Reform**: Schools should formally integrate ecological literacy into the curriculum as a core subject, embedding environmental themes across disciplines. Structured instructional time through eco-labs, outdoor learning, and environmental evaluations will transform stewardship into daily practice.

**Support for Teacher Innovation:** Continuous professional development, coupled with adequate classroom resources, will empower teachers to deliver inquiry-based and experiential ecological education. Removing administrative and financial barriers ensures teachers can create dynamic, real-world learning experiences.

**Strengthening Experiential Learning**: Hands-on activities like recycling, tree planting, and organic gardening should be embedded into project-based learning. This approach equips students with critical thinking, problem-solving, and leadership skills for impactful ecological literacy.

**Enhancing Community Involvement**: Schools must extend ecological education beyond classrooms by engaging families and building local partnerships. Parent workshops and collaborations with civic organizations foster shared responsibility and reinforce sustainability practices at home and in communities.

## Suggestions for Further Research

The following suggestions result from the discussion of the findings of this study:

- Explore students' lived experiences of environmental education, through qualitative and phenomenological lenses, capturing how experiential, place-based effect
- Examine long-term behavioral outcomes through longitudinal studies that track whether environmental literacy cultivated in early schooling translate into sustained, pro-environmental habits.

## Conclusion

This study demonstrates that ecological literacy through environmental education is a dynamic and negotiated process shaped by curriculum structures, teacher innovation, and community involvement. The grounded theory developed provides a framework for strengthening ecological literacy when schools move beyond informal integration toward structured support and systemic alignment. Experiential approaches such as recycling, tree planting, and eco-clubs (Laudato Si) enhance student engagement and understanding, though their long-term impact is limited by behavioral resistance, parental disengagement, and the absence of formal curriculum structures. Importantly, the findings highlight the broader societal relevance of ecological literacy in Africa, where embedding ecological values early in education contributes to biodiversity conservation, sustainable practices, and public health resilience. Therefore, ecological literacy must be prioritized within the education system, not only as a pedagogical innovation but as a strategic pathway toward sustainability, biodiversity protection, and community well-being, with leadership-driven curriculum reform and community participation positioning schools as catalysts for sustainable futures in Africa.

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