

Integrating Indigenous Knowledge with Formal Agricultural Education in Ijaw Communities of Bayelsa State

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Abstract

This study investigated integrating indigenous knowledge with formal Agricultural Education in Ijaw communities of Bayelsa State, Nigeria. The inquiry addressed the persistent disconnect between standardized classroom farming instruction and the actual estuarine, riverine, and flood-recession livelihoods that sustain local communities. A multi-method qualitative research design was adopted, combining curriculum document analysis, field ethnography, and focus group discussions. Through a simple random sampling technique, a sample size of 100 respondents was selected. Data were collected using validated qualitative coding matrices, interview schedules, and focus group guides, and analyzed using thematic and qualitative content analysis. The findings revealed a total structural exclusion of regional aquatic and flood-recession livelihoods from the formal curriculum, which biases toward land-locked terrestrial agronomy. This gap causes severe pedagogical dissonance among instructors and forces the devaluation of viable local practices. Consequently, this instructional mismatch leads to learner alienation, declining student interest, and accelerates the intergenerational loss of critical ecological survival knowledge among Ijaw youths. It was concluded that the current curriculum suffers from a crisis of contextual relevance. The study recommends that the Ministry of Education introduce localized deltaic modules and that schools restructure continuous assessments to incorporate direct, elder-led field partnerships.

Keywords: *Integrating, indigenous knowledge, formal Agricultural Education, Ijaw communities*

Introduction

The agricultural sector today is undergoing profound changes driven by climate change, environmental decline, technological innovations, food insecurity, and shifting livelihood patterns. These realities demand an agricultural education system that blends scientific knowledge with practical, locally relevant experiences. Education in agriculture can no longer be limited to transmitting formal scientific principles; it must also build learners' capacity to understand their environment, solve agricultural problems, apply appropriate technologies, and respond to local challenges. The Food and Agriculture Organization (FAO, 2023) stresses that sustainable food systems depend on acknowledging diverse knowledge traditions, including those preserved by Indigenous Peoples. This is particularly important in communities where farming, fishing, and resource-based livelihoods have historically relied on accumulated local wisdom. Integrating

indigenous knowledge into formal agricultural education therefore creates opportunities to connect community-based practices with structured scientific learning, making education more relevant to learners' realities. Indigenous knowledge represents a vital resource for agricultural education. It can be defined as the collective skills, practices, beliefs, and experiences developed by communities through long-term interaction with their environment (FAO, 2021). Olaniyan and Govender (2023) describe it as locally generated knowledge that helps communities interpret environmental conditions and make agricultural decisions. In practice, this knowledge includes crop cultivation, fishing, periwinkle harvesting, flood farming, soil management, weather prediction, food processing, preservation, and resource use. Transmission occurs through observation, participation, demonstration, storytelling, apprenticeship, and intergenerational exchange. Its strength lies in its contextual nature, shaped by the cultural, environmental, and economic realities of each community. For Ijaw communities, this accumulated ecological knowledge provides practical resources to enrich formal agricultural education.

Formal agricultural education, by contrast, refers to structured teaching and learning within schools, colleges, and other institutions. It is intentional, systematic, and curriculum-driven (UNESCO, 2025). Learners are taught crop and animal production, soil science, fisheries, agricultural economics, environmental management, and technology. FAO (2022) identifies agricultural education as a key mechanism for building competencies to transform agri-food systems and promote sustainability. While formal education provides the scientific framework for organizing and applying agricultural concepts, its effectiveness increases when linked to learners' cultural and environmental contexts. Integrating indigenous knowledge allows learners to gain both scientific explanations and practical insights into community livelihood activities.

In the Niger Delta, particularly among the Ijaw, the need for integration is clear. Rivers, wetlands, mangroves, floodplains, and farmlands have historically shaped food production and livelihoods. This close relationship with the environment has produced knowledge about fishing, periwinkle farming, flood farming, soil and water management, vegetation, weather, and preservation techniques. Historical accounts (Alagoa, 1966) show that Ijaw livelihoods have long been tied to aquatic ecosystems. Yet environmental degradation, flooding, pollution, climate variability, and modernization increasingly disrupt traditional practices (Babatunde, 2020). Preserving and using indigenous knowledge in education has therefore become essential.

Integration involves deliberately linking local ecological practices with formal curricula. In Ijaw communities, this could mean blending fishing, periwinkle farming, and flood farming with lessons in fisheries, aquaculture, wetland management, entrepreneurship, and climate adaptation. Ominikari and Wasini (2022) note that indigenous knowledge is transmitted through observation, participation, and apprenticeship methods that align well with practical agricultural education. Such integration does not replace science but allows learners to examine indigenous practices alongside formal principles, evaluate their ecological foundations, and improve them with scientific knowledge and technology. FAO (2023) highlights this as knowledge co-creation, where indigenous and scientific systems interact to support sustainability.

This approach is especially relevant given the ecological challenges of the Niger Delta. Flooding, pollution, declining soil quality, and climate shifts demand practices that are both scientifically sound and locally adaptable. Indigenous knowledge offers insights into seasonal patterns, water conditions, and adaptation strategies, while formal education provides systematic evaluation and technological alternatives. Olaniyan and Govender (2023) affirm that indigenous knowledge remains crucial for farmers' climate responses in Nigeria. Incorporating practices like fishing,

periwinkle farming, and flood farming into curricula enables learners to understand historical community adaptations while building modern competencies.

Without integration, learners risk losing access to valuable community-based experiences. Modern occupations, environmental changes, and weakened transmission patterns threaten indigenous knowledge. Curricula that neglect local practices present agriculture as abstract, disconnected from learners' environments. FAO (2021) warns that Indigenous Peoples' knowledge systems face erosion under such pressures. Embedding indigenous knowledge into schools and colleges can therefore enhance educational relevance, cultural continuity, practical learning, and sustainability. Ultimately, integrating indigenous knowledge with formal agricultural education in Ijaw communities is vital for building a system that is scientifically rigorous, culturally responsive, and environmentally relevant. By blending traditional fishing, periwinkle farming, and flood farming with structured curricula, learners gain opportunities to connect classroom knowledge with community practices. This enables them to document, evaluate, improve, and apply indigenous methods using modern science and technology. Such integration preserves valuable knowledge, strengthens practical competencies, and fosters appreciation of the local environment creating agricultural education that is both globally informed and locally grounded.

Statement of the Problem

Agricultural education is designed to equip learners with practical knowledge and skills that reflect the farming systems and livelihood practices of their communities. In the Ijaw areas of Bayelsa State, traditional fishing, periwinkle harvesting, and flood farming represent vital forms of indigenous agricultural knowledge developed through generations of interaction with the local environment. Yet, these practices are insufficiently incorporated into the agricultural education curriculum offered in secondary schools and Colleges of Agriculture. As a result, there is a noticeable gap between the school farming taught in classrooms and the actual fishing, periwinkle production, and flood-farming activities that sustain local livelihoods.

This disconnect undermines the relevance of agricultural education, as students are often exposed to practices that fail to reflect the ecological realities, resources, and livelihood systems of their communities. Consequently, learners struggle to connect classroom instruction with real-world agricultural situations. The lack of contextual alignment reduces student interest and engagement, discouraging them from pursuing or adopting agricultural practices. Moreover, the limited integration of indigenous knowledge contributes to the gradual erosion of traditional fishing, periwinkle farming, and flood-farming expertise among younger generations. The central research problem, therefore, lies in the inadequate incorporation of indigenous agricultural knowledge into agricultural education in Ijaw communities. This gap between school-based agricultural learning and community-based practices diminishes both the relevance of education and the sustainability of local agricultural traditions.

Aims and Objectives

The major aim of the study is to analyse the integration of indigenous knowledge with formal agricultural education in Ijaw communities of Bayelsa State. The objectives of study are

1. To analyze the ways and the structural degree to which the formal agricultural education curriculum includes Ijaw indigenous agricultural practices.
2. To examine the perceptions and pedagogical experiences of teachers regarding the integration of local indigenous knowledge with formal agricultural education.

3. To identify the systemic challenges and institutional opportunities that exist for enhancing curriculum responsiveness to indigenous agricultural knowledge in Bayelsa State agricultural education programs.
4. To evaluate how teachers and students perceive the impact of the disconnect between school farming and community livelihoods on the retention of traditional agricultural knowledge.

Research Questions

The research questions stated thus

1. In what ways, and to what structural degree, does the formal agricultural education curriculum include Ijaw indigenous agricultural practices?
2. What are the perceptions and pedagogical experiences of teachers regarding the integration of local indigenous knowledge with formal agricultural education?
3. What systemic challenges and opportunities exist for enhancing curriculum responsiveness to indigenous agricultural knowledge in Bayelsa State agricultural education programs?
4. How do teachers and students perceive the impact of the disconnect between school farming and community livelihoods on the retention of traditional agricultural knowledge?

Methodology

A multi-method qualitative research design was adopted for the study, combining curriculum document analysis, ethnography and focus group discussions to provide a comprehensive and multi-perspective examination of the phenomenon under investigation. The design was considered appropriate because it enabled an empirical, field-based investigation of the integration of indigenous agricultural knowledge systems into formal educational structures while capturing stakeholder perspectives on curriculum relevance, institutional challenges and the retention of traditional agricultural knowledge in Ijaw communities. The target population comprised institutional educators, students and community knowledge experts within the selected educational zones of Bayelsa State. Specifically, the population included 42 indigenous community elders recognised as active custodians of agricultural knowledge within the selected riverine Ijaw communities of Amassoma and Ekeremor. The institutional educator population comprised 34 Agricultural Science teachers in public secondary schools within the selected Ijaw communities and four higher education lecturers specialising in Agricultural Education at Isaac Jasper Boro College of Education, Sagbama, Bayelsa State. The student population comprised 480 Senior Secondary School (SSS 1–3) students offering Agricultural Science within the selected Ijaw communities and 57 undergraduate and diploma students enrolled across the different levels of the Agricultural Education programmes at Isaac Jasper Boro College of Education, Sagbama.

A total sample of 100 human participants was selected for the study. The sample comprised 20 indigenous community elders who served as key cultural informants, 40 Agricultural Science teachers drawn from the 34 public secondary schools, four Agricultural Education lecturers from Isaac Jasper Boro College of Education, 24 Senior Secondary School students and 16 tertiary students from the College of Education. Data were collected using three qualitative research protocols: the Curriculum Content Integration Coding Matrix, the Stakeholder Perception Interview Schedule and the Curriculum Disconnect and Institutional Responsiveness Focus Group Discussion Guide. The Curriculum Content Integration Coding Matrix was used to examine the extent to which traditional fishing, periwinkle production and flood farming were represented in the official Agricultural Education syllabi and related curriculum documents. The Stakeholder

Perception Interview Schedule was used to obtain individual accounts of participants' educational experiences, perceptions and the perceived value of indigenous agricultural knowledge. The Curriculum Disconnect and Institutional Responsiveness Focus Group Discussion Guide was used to obtain the shared views of teachers and students concerning institutional challenges, opportunities for curriculum integration and the retention of indigenous agricultural practices. The focus group prompts were open-ended and designed to elicit detailed qualitative accounts of the disconnect between school-based agricultural learning and community livelihood practices, as well as the intergenerational transmission and retention of indigenous agricultural knowledge. To ensure the quality and rigour of the research instruments, they were subjected to face and content validation by experts in Agricultural Education and Curriculum Studies. The dependability of the qualitative protocols was further enhanced through member checking and peer debriefing.

The qualitative data generated from the study were analysed using thematic analysis and qualitative content analysis. Analysis commenced with the verbatim transcription of audio-recorded focus group discussions, followed by repeated reading and line-by-line coding of the transcripts, ethnographic records and curriculum documents. The inductive coding process facilitated the identification of recurring concepts, patterns, experiences and institutional challenges emerging from the data, while the curriculum analysis framework was used to establish the presence, absence and nature of indigenous agricultural concepts within the official educational materials. The emerging codes were organised into categories and broader themes reflecting curriculum integration, stakeholder perceptions, institutional responsiveness, indigenous knowledge retention and the relationship between school-based agricultural learning and community livelihood practices. The findings were interpreted using a qualitative framework of curriculum responsiveness in which explicit inclusion of indigenous content and positive stakeholder alignment indicated stronger curriculum integration, while systemic constraints, instructional misalignment and limited representation indicated varying degrees of curriculum integration gaps. Evidence of substantial omission of indigenous agricultural knowledge and perceived cultural erosion was interpreted as indicating a more pronounced curricular disconnect. The validity and trustworthiness of the qualitative findings were strengthened through methodological triangulation involving ethnographic observations, curriculum document analysis and focus group discussions. Evidence obtained from community-based observations and participants' accounts was compared with information identified in the curriculum documents to establish areas of convergence, divergence and omission. This triangulated approach enhanced the credibility of the findings and provided a more comprehensive account of institutional realities, curriculum practices and community-based perceptions concerning the integration and retention of indigenous agricultural knowledge in Ijaw communities.

Results and Discussion

Presentation of Demographic and Structural Data of the Respondents and Documents

The ethnographic phase involved 20 indigenous community elders drawn strictly from the riverine domains of Amassoma and Ekeremor. An analysis of their profiles indicated that all 20 participants had exceeded the baseline requirement of two decades of active agrarian experience, with individual tracking showing a range between 22 and 48 years of active practice. In terms of livelihood specialization, 9 elders specialized primarily in traditional estuarine and riverine fishing techniques, 6 elders focused on indigenous periwinkle production and mudflat habitat management, while the remaining 5 elders specialized in seasonal flood-recession farming and

wetland crop management. All 20 key informants lacked formal training in conventional agricultural science, relying completely on intergenerational oral traditions and experiential environmental interactions.

The pedagogical assessment utilized a total sample of 38 institutional instructors operating within Bayelsa State. The public secondary school cohort consisted of 34 Agricultural Science teachers providing a full census coverage of the targeted institutions, with 18 teachers drawn from Community Secondary School, Amassoma, and 16 teachers from Government Secondary School, Ekeremor. Demographic breakdown of these secondary teachers revealed that 28 instructors held a Bachelor's degree in Agricultural Education (B.Sc. Ed.), while 6 instructors held a Postgraduate Diploma in Education (PGDE) alongside technical agricultural degrees. Their instructional experience ranged from 4 to 17 years. The tertiary cohort comprised 4 higher education lecturers from the Agricultural Education at the Isaac Jasper Boro College of Education, Sagbama. All 4 lecturers possessed advanced postgraduate degrees with a minimum of 8 years of academic teaching experience in teacher-preparation programs.

The learner-centered evaluations involved a total sample size of 40 institutional students distributed across five interactive focus group sessions. The secondary school student cohort comprised 24 senior secondary school (SSS 1–3) students who were actively registered for Agricultural Science, with 12 students randomly selected from Community Secondary School, Amassoma, and 12 students from Government Secondary School, Ekeremor. The tertiary student cohort consisted of 16 students enrolled within the regular undergraduate, Nigeria Certificate in Education (NCE), and National Diploma (ND) tracks of the Agricultural Education programs at the Isaac Jasper Boro College of Education, Sagbama. All 40 sampled learners were confirmed to be lifelong residents of Ijaw riverine communities, indicating they had direct personal exposure to the community's traditional farming outside of school hours.

The desk-based curriculum document analysis targeted the official regulatory guides and instructional resources prescribed for Agricultural Education within the study area. At the secondary tier, the researcher audited the official National Educational Research and Development Council (NERDC) Senior Secondary School Curriculum for Agricultural Science, the corresponding state unified schemes of work, and the 3 core recommended textbooks utilized at Community Secondary School, Amassoma, and Government Secondary School, Ekeremor. At the tertiary tier, the analysis focused on the official National Commission for Colleges of Education (NCCE) Minimum Academic Standards for Vocational and Technical Education, alongside the specific 14 course outlines governing the Agricultural Education graduation tracks at the Isaac Jasper Boro College of Education, Sagbama.

Analysis and Presentation of Results According to Research Questions

The qualitative findings of this study are presented below, systematically organized around the four primary research questions formulated to guide the inquiry. The data generated through curriculum document analysis, field ethnography, and focus group discussions are analyzed using qualitative content and thematic analysis approaches, utilizing direct verbatim extracts from the participants to substantiate the emerging themes.

Research Question 1: In what ways, and to what structural degree, does the formal agricultural education curriculum include Ijaw indigenous agricultural practices?

To address this research question, the qualitative content analysis of the NERDC secondary curriculum, the NCCE minimum academic standards, and selected textbooks was conducted using a preset coding matrix. The structural analysis revealed a profound systemic exclusion of local ecological systems, yielding two primary sub-themes.

- **Sub-Theme 1.1: Complete Omission of Regional Estuarine Livelihoods:** The structural review of both the secondary school textbooks and college course outlines revealed that specialized coastal and riverine agricultural practices are completely unrepresented in the text. The curriculum documents display a structural bias toward terrestrial, land-locked agronomy. Textual items regarding aquaculture are restricted to westernized, intensive artificial fish pond construction (such as concrete or earthen tanks for catfish breeding). Local estuarine livelihoods specifically traditional open-water riverine fishing cycles, the seasonal deployment of indigenous bamboo barrier traps (*Asa* and *Iju*), and ecological periwinkle mudflat habitat management receive zero textual mentions or practical specifications across all audited curriculum frameworks.
- **Sub-Theme 1.2: Generalization of Terrestrial Crop Systems:** The document analysis showed that regional flood-recession agriculture (*Aba-Biri*) is structurally ignored. The curriculum models operate under a generalized assumption of uniform rainfall and upland soil conditions. The unique crop management techniques developed by Ijaw communities, such as the construction of high-water-table mud mounds (*Ogu*) and the cultivation of specific water-tolerant yam variations (*Dioscorea alata*) designed to match the seasonal withdrawal of the River Niger distributaries, are treated as non-existent. Instead, the textbooks exclusively prescribe westernized soil conservation models and mechanical tillage methods that are completely unsuited for the riverine topography of Bayelsa State.

Research Question 2: What are the perceptions and pedagogical experiences of teachers regarding the integration of local indigenous knowledge with formal agricultural education?

Data addressing this research question were generated from the individual interviews with the 34 secondary school teachers and the focus group discussion with the 4 higher education lecturers at the Isaac Jasper Boro College of Education, Sagbama. The analysis produced two core sub-themes reflecting their professional observations.

- **Sub-Theme 2.1: Epistemic Devaluation of Indigenous Techniques:** A large majority of the secondary school teachers indicated that the formal educational structure forces them to portray indigenous knowledge as backward or unscientific. The pedagogical experience is characterized by an instructional requirement to teach modern mechanized farming, even when the tools and methods are completely unavailable or structurally unviable in the local environment. Teachers expressed frustration that the current examination frameworks penalize students who offer answers based on successful local agricultural practices. A teacher from Community Secondary School, Amassoma, remarked:

“The system forces us to teach what is written, not what works here. When I teach fish management, the syllabus dictates that I focus on artificial concrete ponds and commercial feeds. If a student explains how their family manages a natural periwinkle bed or constructs a bamboo river trap based on the tides, it cannot be graded because it is

not in the NERDC guide. We are essentially teaching them to ignore their own reality.”

- **Sub-Theme 2.2: Pedagogical Dissonance and Instructional Improvisation:** The instructors highlighted a severe disconnect during practical instructional sessions. Because the schools lack the terrestrial landmass required for the school farming models prescribed in the syllabus (such as tractor operations or large-scale cattle husbandry), teachers are forced to either skip practical sections entirely or teach them purely as abstract concepts. A lecturer from the Isaac Jasper Boro College of Education summarized this instructional dilemma:

“We are training teachers in a vacuum. We teach them how to lecture on mechanized grain cultivation and tractor maintenance at Sagbama. Then they are deployed to riverine schools where the entire community survives on flood farming and delta fishing. The teachers experience intense pedagogical dissonance because their formal training provides them with no tools to engage a riverine agricultural economy.”

Research Question 3: What systemic challenges and opportunities exist for enhancing curriculum responsiveness to indigenous agricultural knowledge in Bayelsa State agricultural education programs?

The thematic analysis of data obtained from teachers, lecturers, and curriculum documents identified the structural blockages impeding curriculum adaptation, alongside potential entry points for localization.

- **Sub-Theme 3.1: Rigid Bureaucratic Centralization:** The primary systemic challenge identified by the higher education lecturers is the highly centralized nature of educational policymaking in Nigeria. Curricula for both secondary schools (NERDC) and Colleges of Education (NCCE) are drawn up at the federal level with minimal regional input. This bureaucratic centralization makes it illegal or operationally impossible for local institutions like the Isaac Jasper Boro College of Education to formally alter course outlines to incorporate Ijaw-specific fishing or flood-farming modules without violating national accreditation benchmarks.

- **Sub-Theme 3.2: Shortage of Codified Instructional Materials:** Teachers and lecturers consistently noted that because indigenous agricultural knowledge is preserved through oral traditions and experiential practice among community elders, there is a total lack of written instructional manuals, textbooks, or teaching aids that capture these methods in scientific terms. This lack of codification prevents interested teachers from bringing these topics into the classroom in a structured manner.

- **Sub-Theme 3.3: Decentralized Local Content Windows as Strategic Opportunities:** Despite these challenges, the data revealed an institutional opportunity within the flexible space allocated for local practicals and community-based projects. Lecturers noted that the school-based assessment (SBA) frameworks could serve as an immediate entry point. By structurally redesigning mandatory field practicals to include the documentation of local elder-led techniques, schools can create an informal bridge toward curriculum responsiveness without waiting for federal policy overhaul.

Research Question 4: How do teachers and students perceive the impact of the disconnect between school farming and community livelihoods on the retention of traditional agricultural knowledge?

Data from the focus group discussions involving the 24 secondary school students, 16 tertiary students, and their instructors were analyzed to evaluate the wider socio-cultural impacts of this curriculum gap, resulting in two final sub-themes.

- **Sub-Theme 4.1: Alienation and Declining Learner Interest:** The student focus groups revealed that the total exclusion of local agricultural practices causes severe alienation. Students stated that they find the agricultural science curriculum boring and irrelevant to their future livelihoods because school farming is often reduced to clearing school compounds or memorizing definitions of exotic agricultural tools they will never see. A student from Government Secondary School, Ekeremor, stated clearly:

“What they teach us in school farming has nothing to do with how our parents make money in the village. In class, we spend weeks drawing tractors and learning about northern cattle herds. But when I come home, I have to go to the river to help my father set fishing traps or gather periwinkles. School farming feels like a punishment, while the real farming that feeds us is treated like it doesn't matter.”

- **Sub-Theme 4.2: Intergenerational Knowledge Erosion:** Both the teachers and the community elders expressed deep concern over the accelerated loss of indigenous ecological knowledge among the younger generation. Because the formal school system ignores these complex traditional systems, students grow up viewing traditional fishing, periwinkle production, and flood farming as low-status, unscientific activities. Consequently, the specialized knowledge required to read lunar cycles, identify natural fish toxins, and manage fragile mangrove ecosystems is not being transmitted to the youth, leading to a severe cultural and economic erosion within the Ijaw communities.

Discussion of Findings

The findings reveal a complete structural omission of regional estuarine and aquatic cultivation systems within the formal textbooks and syllabi, highlighting a severe geographic disconnect. While the national NERDC syllabus focuses heavily on terrestrial agronomy and Westernized fish tank setups, it completely ignores the open-water realities of the Niger Delta. This omission stands in sharp contrast to the ethnographic data gathered from the community elders in Amassoma and Ekeremor, who possess highly sophisticated, scientifically sound environmental knowledge regarding non-synthetic river traps and rotational mudflat harvesting. This systemic exclusion of coastal practices validates the critique by Fafunwa (2018), who asserted that formal agricultural education in Nigeria suffers from an urban and terrestrial bias that reduces curriculum relevance for learners in riverine or indigenous zones. By failing to integrate these localized aquatic livelihoods, the formal curriculum operates as an alien framework that ignores the immediate survival practices of the Ijaw people.

The document analysis and interview results reveal a significant technical mismatch between the standardized national curriculum and regional flood-recession agriculture. The formal textbooks assume uniform rainfall patterns and standard upland soil conditions, prescribing tractor operations and mechanized tillage that are structurally impossible to use in the waterlogged terrains of

Bayelsa State. Conversely, the fieldwork with the flood-farming elders demonstrates a precise agricultural adaptation where planting cycles are synchronized with the annual flooding of the River Niger distributaries and natural silt is used as an organic fertilizer on raised mud mounds (*Ogu*). This technical dissonance aligns with the findings of Kolawole (2021), who observed that conventional agricultural education frameworks in Nigeria frequently classify complex indigenous agroecological practices as primitive, thereby ignoring viable, locally adapted solutions to environmental constraints. Consequently, the curriculum teaches unachievable mechanized technologies while ignoring the functional flood-adaptation strategies that ensure food security in the region. The individual interviews with the secondary school teachers and the focus group discussion with the higher education lecturers reveal how a centralized educational system strips local instructor of their pedagogical agency. Both groups explained that because national examination frameworks are strictly standardized at the federal level, teachers are forced to devalue local practices during daily lessons to ensure students pass written tests, even when those text-based methods are useless in a riverine environment. This rigid institutional setup mirrors the structural challenges identified by Okam (2019), who noted that the implementation of culturally responsive pedagogy in Nigeria remains severely limited by rigid, exam-oriented frameworks and a lack of regionalized textbook codification. This lock-step system prevents the lecturers at the Isaac Jasper Boro College of Education, Sagbama, from adapting their teacher-training programs, which forces them to graduate educators who are well-versed in theoretical terrestrial farming but have no formal training on how to improve the riverine agricultural systems they will encounter. The focus group discussions with the secondary school and tertiary students reveal that the exclusion of local livelihoods leads directly to educational alienation, a lack of student interest, and the erosion of ancestral environmental survival skills. Learners consistently noted that they find formal agricultural science boring and irrelevant because it treats their home experiences as non-existent, reducing school farming to tedious manual weeding or memorizing diagrams of tractors they will never see. This erosion of interest and traditional knowledge supports the socio-cultural learning perspectives of Gay (2020), who established that when students do not see their identities, languages, and community practices reflected in the classroom, their academic engagement plummets and the intergenerational transmission of context-specific environmental stewardship is severed. Because the formal school system positions Westernized, terrestrial farming as the only true science, younger generations grow up viewing traditional fishing, periwinkle production, and flood farming as low-status activities, which actively accelerates the loss of critical ecological survival knowledge among Ijaw youths.

Conclusion

Based on the qualitative findings and discussions, it is concluded that indigenous knowledge is not integrated into formal Agricultural Education. The standardized curriculum remains strictly focused on terrestrial, land-locked agronomy, which completely ignores successful local water-based practices. While community elders successfully use seasonal cycles, traditional traps, and protected mudflats to sustain their families, these functional regional methods are completely excluded from national regulatory syllabi. This strict focus on standardized, terrestrial agricultural science strips local educators of their pedagogical freedom. It forces teachers to position essential community livelihoods as backward, while presenting unavailable mechanized technologies as the only true science. For students, this mismatch turns school farming into an alienating, irrelevant chore. This lack of relevance drives down student interest and actively cuts off the

intergenerational transmission of complex environmental survival skills within the Ijaw communities in Bayelsa State.

Recommendations

Based on the findings of this study, the following recommendations are offered:

1. The Bayelsa State Ministry of Education should formally integrate a Deltaic Aquaculture and Estuarine Fisheries module into the secondary curriculum to capture traditional bamboo traps and periwinkle mudflat management.
2. School authorities must replace unrealistic upland mechanization indicators with practical grading rubrics that evaluate students on regional flood-recession agriculture and the construction of high-water-table mud mounds.
3. Colleges of education must develop and distribute localized instructional manuals that textually codify the science of Ijaw farming systems, giving teachers approved guidelines to assess local knowledge.
4. Secondary institutions must restructure school-based continuous assessments to mandate field projects where students collaborate directly with community elders, thereby restoring the intergenerational transmission of endangered ecological survival skills.

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