

Impact of Agricultural Education on Entrepreneurship Skills among Secondary School Students in Eha-Amufu, Enugu State, Nigeria

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ABSTRACT

Purpose. Youth unemployment and an ageing farming population remain persistent challenges in Nigeria. This study examined the impact of agricultural education on entrepreneurship skills among secondary school students in Eha-Amufu, Isi-Uzo Local Government Area, Enugu State.

Methodology. A descriptive survey was used. A multi-stage sample of 312 SS2 and SS3 Agricultural Science students from eight schools completed the 42-item Agricultural Education Entrepreneurship Skills Questionnaire (Cronbach's $\alpha = .86$). Means, t-tests and Pearson correlation were applied at the .05 level.

Findings. Agricultural education had a high impact on technical and production skills (grand mean = 3.21), a high impact on managerial and opportunity-recognition skills (3.08), and a moderately high impact on marketing, record-keeping and financial literacy (2.87). There was no significant gender difference, $t(310) = 1.42$, $p = .156$. Private-school students scored slightly higher than public-school students, $t(310) = 2.87$, $p = .004$. Practical and school-farm exposure correlated strongly with skill scores, $r(310) = .64$, $p < .001$.

Originality. The paper provides the first located local evidence on secondary Agricultural Science and agripreneurial skills in Eha-Amufu, a farming town that also hosts a federal college of education.

Research implications. Functional school farms, an explicit agribusiness module, teacher retraining in experiential pedagogy, and school–community enterprise linkages are required if the subject is to produce agripreneurs rather than examination content only.

Keywords: *agricultural education, entrepreneurship skills, agripreneurship, school farm, secondary school students, Eha-Amufu, Enugu State*

1. Introduction

Nigeria's labour market continues to absorb large cohorts of school leavers into an economy in which formal wage employment is scarce. Agriculture still accounts for a substantial share of livelihoods in rural and peri-urban communities of the South-East, yet the average age of practising farmers has risen and youth participation in agribusiness remains uneven (Chah et al., 2024; National Bureau of Statistics, 2024). Policy has therefore framed agricultural education as a vehicle for self-employment and food-system renewal, not only as a science subject (Federal Republic of Nigeria [FRN], 2013, 2020).

Eha-Amufu, the principal town of Isi-Uzo Local Government Area, is an agrarian settlement whose economy is anchored on yam, cassava, rice, oil palm, maize and small-scale livestock (Nnaji, 2019). The town hosts the Federal College of Education, Eha-Amufu, and more than a dozen public and private secondary schools. That combination of farming culture and educational infrastructure makes it a relevant site for asking whether secondary agricultural education develops entrepreneurship skills or merely transmits examination content.

Entrepreneurship skills here mean the technical production competences, managerial and opportunity-recognition capacities, and marketing and financial literacies that enable a young person to identify, start and sustain a small agribusiness. School farms and supervised practicals were intended to cultivate these skills (Ejembi, 2019; FRN, 2013). Reviews of Nigerian secondary agricultural education repeatedly report a theory-to-practice imbalance, weak school farms and limited value-chain exposure (Baridoma & Nlebem, 2022). The problem is therefore local: it is not established how far classroom and school-farm instruction in Eha-Amufu translates into entrepreneurship skills among SS2 and SS3 students, whether the translation differs by gender or school type, and which constraints blunt the impact.

1.1 Purpose, questions and hypotheses

The study sought to determine the extent to which agricultural education develops (a) technical and production skills, (b) managerial and opportunity-recognition skills, and (c) marketing, record-keeping and financial-literacy skills; to identify challenges that limit that impact; and to examine differences by gender and school type. Five research questions matched these purposes. Three null hypotheses were tested at the .05 level: no gender difference in composite skill ratings (H01); no public–private difference (H02); and no relationship between practical or school-farm exposure and composite skill scores (H03).

2. Literature and theoretical framework

The National Policy on Education positions secondary education as a stage that should provide vocational skills for agricultural and economic development (FRN, 2013). Later science and technology policy calls for entrepreneurial agricultural education that can support farm establishment and agro-processing (FRN, 2020). Empirical studies generally support a positive association between agricultural instruction and agribusiness outcomes when the instruction is practical. Baridoma and Nlebem (2022) found that functional school farms enabled students in Rivers State to acquire skills in poultry, snail and goat production. Makinde et al. (2024) reported that the Start Them Early Programme in Oyo State influenced willingness to engage in agribusiness. Umar (2025) documented gains in agribusiness literacy and career intention after an experiential curriculum in Sokoto State, and Iliya and Yaro (2025) reached a similar conclusion in North-East Nigeria. Skill inventories in the South-East recur across technical, managerial and marketing clusters (Emeh & Udensi, 2019; Ojomu et al., 2023). Chah et al. (2024) caution that even higher-institution graduates often judge the theory–practice ratio unfavourable. Eje (2023) showed that home-farm experience among senior secondary students in Enugu State was strongly related to Agricultural Science performance.

The school farm is the principal site for converting content into enterprise competence (Ejembi, 2019; Olumide-Oyaniyi, 2025). It supplies concrete experience in input selection, husbandry, record-keeping, costing and informal marketing, the same operations that a small agribusiness requires. Where farms are non-functional, instruction collapses into chalkboard demonstration and students leave with certificates but without a practised production cycle (Akor et al., 2022). Awotoye et al. (2020) argue that agricultural entrepreneurship education is a strategic instrument for national development precisely because it can link classroom knowledge to household and community enterprises. An agrarian hinterland such as Eha-Amufu cannot automatically produce agribusiness unless schools organise that hinterland into supervised, reflective practice.

The study is anchored on Kolb's (1984) experiential learning theory, which treats learning as a cycle of concrete experience, reflective observation, abstract conceptualisation and active experimentation. Baker et al. (2012) aligned the cycle with the comprehensive agricultural education model and argued that instructors must plan reflection and experimentation rather than assume that farm activity automatically produces learning. Applications of the cycle in Nigerian classrooms, including vegetable-crop production in Anambra State, have shown performance gains when the four stages are deliberately sequenced (Okafor, 2023). In the present study, school-farm work, home-farm chores and Agricultural Science practicals are the concrete experience; class discussion and record books are the reflection; agribusiness-planning items capture conceptualisation; and reported readiness to start a micro-enterprise captures active experimentation.

The second framework is human capital theory (Becker, 1993), which treats education as an investment that raises productive capacity. Agricultural education is expected to raise students' agribusiness human capital, the specific skills that increase the expected returns to self-employment in the local food system. The theory predicts a larger return when instruction is intensive and practice-rich, which underpins H03. Together, experiential learning explains the pedagogical mechanism and human capital theory explains the developmental rationale. Although South-East and Enugu studies exist on home-farm experience, cucumber-enterprise skills and tertiary agribusiness, no located study has isolated secondary Agricultural Science students in Eha-Amufu, a town that is at once a farming hub, a teacher-education centre and a community that has experienced farm-livelihood shocks.

3. Method

A descriptive survey design was used because perceived impact and self-rated skills were observed without experimental manipulation. The population comprised SS2 and SS3 Agricultural Science students in registered public and private secondary schools in Eha-Amufu and adjoining settlements in the 2025/2026 session. Twelve schools had an active Agricultural Science class. Eight were selected to represent public and private ownership and town versus farm-settlement location, including Union Secondary School, Community Secondary School Umuhu, Community Secondary School Mgbuji, Aguamede Community Secondary School, Community Secondary School Eha-Ohuala and Von International Secondary School. Intact arms were sampled and 330 questionnaires issued. After incomplete scripts were removed, 312 instruments (94.5%) were analysed: 168 males (53.8%) and 144 females (46.2%); 214 public-school (68.6%) and 98 private-school students (31.4%); 148 SS2 (47.4%) and 164 SS3 (52.6%). Practical exposure was high for 139 students (44.6%), moderate for 112 (35.9%) and low for 61 (19.6%).

The Agricultural Education Entrepreneurship Skills Questionnaire (AEESQ) was adapted from Emeh and Udensi (2019), Baridoma and Nlebem (2022) and Ojomu et al. (2023) to the local cropping and livestock calendar. Section B contained 12 technical, 10 managerial, 10 marketing–financial and 10 challenge items, scored Strongly Agree (4) to Strongly Disagree (1). A cluster mean of 2.50 or above was interpreted as high impact or a confirmed challenge. Three lecturers at the Federal College of Education, Eha-Amufu, and one measurement specialist at the University of

Nigeria, Nsukka, reviewed content validity. A pilot of 30 SS3 students in Ikem yielded alphas of .84, .81, .79, .80 and .86 for the full skills scale. Principals gave permission. Participation was voluntary, anonymous and unrelated to assessment. Means answered the research questions. Independent-samples t-tests tested H01 and H02. Pearson correlation tested H03, using a four-item practical-exposure index and the mean of 32 skill items. Analyses used SPSS Version 27, $\alpha = .05$.

4. Results

Table 1. Demographic characteristics of respondents (N = 312)

Variable	Category	n	%
Gender	Male	168	53.8
	Female	144	46.2
School type	Public	214	68.6
	Private	98	31.4
Class	SS2	148	47.4
	SS3	164	52.6
Practical exposure	High	139	44.6
	Moderate	112	35.9
	Low	61	19.6

Note. Percentages are rounded to one decimal place.

4.1 Technical and production skills

All 12 technical items met the 2.50 criterion. Highest ratings were identification of local crop enterprises for small plots (M = 3.41), basic poultry husbandry (M = 3.36) and yam, cassava and maize operations (M = 3.33). Lower, but still accepted, means appeared for agro-processing (M = 2.92) and use of improved planting materials (M = 2.96). The cluster grand mean of 3.21 indicates a high impact.

Table 2. Technical and production skills acquired through agricultural education

Item (I can...)	M	SD	Decision
Identify profitable local crop enterprises for small plots	3.41	0.71	High
Carry out land preparation and planting for yam, cassava or maize	3.33	0.69	High
Apply basic poultry housing, feeding and health practices	3.36	0.74	High
Manage a household-scale goat or small-ruminant enterprise	3.18	0.81	High
Select and use simple farm tools safely	3.29	0.73	High
Practise basic soil-fertility and organic-manure management	3.14	0.79	High
Carry out weeding, pest recognition and simple control	3.22	0.76	High

Harvest, sort and store produce to reduce post-harvest loss	3.11	0.82	High
Use improved seeds or cuttings when available	2.96	0.84	High
Process a farm product into a marketable form	2.92	0.88	High
Keep a production calendar for at least one enterprise	3.19	0.77	High
Link classroom topics to school-farm or home-farm work	3.37	0.70	High
Grand mean	3.21	0.48	High

Note. $N = 312$. Criterion mean = 2.50. Scale: 1 = strongly disagree to 4 = strongly agree.

4.2 Managerial and opportunity-recognition skills

The cluster mean was 3.08. Students agreed that agricultural education helped them recognise local agribusiness opportunities ($M = 3.24$), organise group farm tasks ($M = 3.26$) and set production targets ($M = 3.17$). Writing a one-page enterprise plan ($M = 2.81$) and assessing risk ($M = 2.86$) were weaker, though still above the criterion.

Table 3. Managerial and opportunity-recognition skills

Item	M	SD	Decision
Recognise agribusiness opportunities in the Eha-Amufu market	3.24	0.76	High
Set simple production targets for a school or home enterprise	3.17	0.74	High
Organise farm tasks and assign roles in a student group	3.26	0.71	High
Decide what to produce in a given season	3.12	0.79	High
Identify sources of information on improved practices	3.05	0.82	High
Show initiative when a farm task does not go as planned	3.01	0.84	High
Write a one-page plan for a micro agribusiness	2.81	0.91	High
Assess obvious risks before starting a small enterprise	2.86	0.88	High
Persist with a production cycle until harvest or sale	3.19	0.77	High
See agriculture as a possible self-employment pathway	3.09	0.85	High
Grand mean	3.08	0.51	High

Note. $N = 312$. Criterion mean = 2.50.

4.3 Marketing, records and financial literacy

This cluster was the weakest (grand mean = 2.87) but still above the criterion. Students were more confident about selling small lots ($M = 3.11$) and grading produce ($M = 3.02$) than about cash books ($M = 2.64$), profit calculation ($M = 2.71$) and non-family start-up capital ($M = 2.58$). Production teaching outpaces enterprise numeracy.

Table 4. Marketing, record-keeping and financial-literacy skills

Item	M	SD	Decision
Grade and present produce in a form buyers will accept	3.02	0.81	High
Sell a small lot of produce in the local periodic market	3.11	0.79	High
State a fair asking price from cost and local rates	2.84	0.86	High
Keep a simple record of inputs used	2.91	0.84	High
Keep a simple cash record of money in and money out	2.64	0.92	High
Calculate an approximate profit or loss after a cycle	2.71	0.90	High
Distinguish household consumption from enterprise sales	2.88	0.83	High
Identify a source of start-up capital besides family	2.58	0.94	High
Explain why quality and timing affect farm-gate price	3.06	0.80	High
Use a mobile phone to check prices or contact a buyer	2.93	0.88	High
Grand mean	2.87	0.56	High

Note. $N = 312$. "High" denotes mean ≥ 2.50 .

4.4 Challenges, gender, school type and exposure

Nine of ten challenge items were accepted. The strongest constraints were inadequate school-farm facilities ($M = 3.38$), little exposure to modern agro-technology ($M = 3.29$), no realistic link to start-up capital ($M = 3.27$) and lessons experienced as more theoretical than practical ($M = 3.21$). Students did not agree that teachers lacked subject knowledge ($M = 2.31$). The constraint profile is infrastructural and pedagogical. Male ($M = 3.08$) and female students ($M = 3.01$) did not differ, $t(310) = 1.42$, $p = .156$, so $H01$ was not rejected. Private-school students ($M = 3.16$) scored higher than public-school students ($M = 3.00$), $t(310) = 2.87$, $p = .004$, $d = 0.36$, so $H02$ was rejected. Practical exposure correlated strongly with the composite skill score, $r(310) = .64$, $p < .001$, so $H03$ was rejected.

Table 5. Challenges limiting the impact of agricultural education

Challenge	M	SD	Decision
School farm absent, poorly stocked or irregularly used	3.38	0.79	Agreed
Little exposure to modern tools, improved breeds or ICT	3.29	0.81	Agreed
No realistic link to start-up capital or input dealers	3.27	0.83	Agreed
Lessons are more theoretical than practical	3.21	0.86	Agreed
Practical periods often converted to other uses	3.14	0.88	Agreed

Large class size limits hands-on practice	3.09	0.90	Agreed
Insecurity or farm-settlement disruption affects field work	2.97	0.99	Agreed
Parents prefer white-collar careers over agribusiness	2.88	0.94	Agreed
Limited teacher in-service training on agripreneurship	2.76	0.91	Agreed
Agricultural Science teachers lack subject knowledge	2.31	0.97	Disagreed
Grand mean	3.03	0.52	Agreed

Note. $N = 312$. Criterion mean = 2.50.

Table 6. t-tests of composite entrepreneurship-skill scores and correlation with exposure

Group	n	M	SD	t	df	p
Male	168	3.08	0.44	1.42	310	.156
Female	144	3.01	0.46			
Public	214	3.00	0.46	2.87	310	.004
Private	98	3.16	0.41			
Exposure × skill score	312	$r = .64$			310	< .001

Note. Composite score is the mean of 32 skill items. Equal-variance, two-tailed tests.

5. Discussion

The high impact on technical skills is consistent with school-farm studies in Rivers State (Baridoma & Nlebem, 2022) and with enterprise-skill inventories in Enugu and Ebonyi (Emeh & Udensi, 2019; Ojomu et al., 2023). Students in Eha-Amufu live inside a production landscape, so Agricultural Science amplifies competences many already glimpse at home (Eje, 2023). Lower scores on processing and improved planting materials show that instruction still privileges primary production over value addition (Umar, 2025; Iliya & Yaro, 2025).

Managerial skills were also high, but weaker on written planning and formal risk assessment, in line with Chah et al. (2024). Kolb's cycle is only partly completed: concrete experience is present, but conversion of that work into a documented venture is thinner (Baker et al., 2012; Kolb, 1984). Marketing and financial literacy lagged. Human capital theory predicts that education raises returns only when the skills markets reward are actually taught (Becker, 1993). Local periodic markets reward grading and timing, and they punish farmers who cannot separate household consumption from enterprise accounts. Eha-Amufu schools have not yet institutionalised a commercial layer comparable to structured programmes such as STEP (Makinde et al., 2024).

The challenge profile replicates a national pattern of weak school farms, theory-heavy delivery and poor linkage to finance (Akor et al., 2022; Ejembi, 2019). Students' rejection of the claim that teachers lack subject knowledge is noteworthy: the bottleneck is conditions of practice, not content mastery. The modest endorsement of insecurity is locally intelligible given documented farm-settlement disruption (Sahara Reporters, 2022). The non-significant gender difference contradicts the assumption that boys extract more agripreneurial value from the subject. The school-type difference is small and should not be over-read; public-school means still sat above 2.50. The correlation of .64 is the central mechanistic result. It supports the claim that competence grows when experience is organised, reflected upon and reused (Kolb, 1984; Baker et al., 2012; Okafor, 2023), and the claim that the intensity of relevant training predicts the skill stock (Becker, 1993). It also agrees with Olumide-Oyaniyi's (2025) account that school-based poultry projects transfer both husbandry and entrepreneurial thinking. Agricultural education in Eha-Amufu works when students farm under guidance, and less well when the subject remains a chalkboard course offered in a farming town.

For curriculum agencies, the data argue for an explicit agribusiness strand inside senior-secondary Agricultural Science, covering costing, records, local market analysis and micro-planning, rather than entrepreneurship as a cross-cutting slogan. For school administrators in Isi-Uzo, a fenced, stocked and timetabled school farm is not an optional extra. It is the treatment that produces the outcome policy makers attribute to the subject. For the Federal College of Education, Eha-Amufu, which already invests in piggery, poultry and crop units for teacher training, the findings create a rationale for structured outreach to neighbouring secondary schools so that pre-service teachers practise experiential pedagogy in authentic classrooms.

6. Conclusion and recommendations

Agricultural education in Eha-Amufu has a high positive impact on technical and managerial skills and a moderately high impact on marketing and financial literacy. The impact does not differ by gender, is slightly higher in private schools, and is strongly associated with practical exposure. The main constraints are weak school farms, limited agro-technology, weak capital linkage and a lingering theory–practice imbalance. The subject is a necessary but not automatic engine of agripreneurship.

Six actions follow. First, the Enugu State Ministry of Education and school-based management committees in Isi-Uzo should require every senior school offering Agricultural Science to maintain a functional school farm, with a crop plot and at least one small livestock unit, and to protect practical periods on the timetable. Second, curriculum desks should embed a short agribusiness module, covering enterprise selection, simple costing, cash records and local market mapping, in SS2 and SS3 rather than treating entrepreneurship as an undefined theme. Third, Agricultural Science teachers should be retrained in experience, reflection, conceptualisation and experimentation, with mentoring from the Agricultural Education department of the Federal College of Education, Eha-Amufu. Fourth, schools should form agribusiness clubs linked to the Eha-Amufu main market, input dealers and the College demonstration units, so that students practise pricing, grading and micro-sales, not only production. Fifth, public schools, which enrol the majority of students, should be prioritised for farm-input grants and teacher support so that the small school-type gap does not widen. Sixth, further research should use a quasi-experimental school-farm intervention with pre- and post-skill measures, and should add teacher and parent interviews to triangulate the student self-reports used here.

The study relied on self-report rather than observed performance, is bounded to one town, and the exposure–skill correlation is not a causal estimate. These limits qualify the findings but do not erase the consistent pattern across eight schools and three skill domains.

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