

SUSTAINABLE AGRICULTURAL SCIENCE EDUCATION, ENTREPRENEURSHIP AND SKILL ACQUISITION FOR SELF-RELIANCE IN DELTA STATE, NIGERIA

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ABSTRACT: This study focused on sustainable agricultural science education, entrepreneurship and skill acquisition as means of promoting self-reliance among Agricultural Science Education students in Delta State, Nigeria. Two research questions and two null hypotheses guided the study. A descriptive survey design was used, with a population of 1,200 male and female Agricultural Science Education students. A sample of 200 students, consisting of 90 males and 110 females, was selected using stratified random sampling. Data was collected with a 10-item structured questionnaire based on the objectives of the study and rated on a four-point Likert scale. The instrument was validated by experts, and a reliability coefficient of 0.82 was obtained using Cronbach's Alpha. Mean and standard deviation were used to answer the research questions, while t-test was used to test the hypotheses at the 0.05 level of significance. The findings showed that agricultural science education equips students with the knowledge and practical skills needed for self-reliance to a high extent, with a grand mean of 3.19. The study also found that entrepreneurship education and skill acquisition help students develop the abilities

required to establish and manage sustainable agricultural enterprises to a high extent, with a grand mean of 3.22. The results of the t-test showed that there was no significant difference between the responses of male and female students on both research areas. The study concluded that improving practical agricultural education, entrepreneurship training and skill acquisition can better prepare students for self-employment and sustainable agricultural enterprise development. It was therefore recommended that agricultural education institutions should provide more practical training, improve facilities and equipment, strengthen entrepreneurship education and develop stronger partnerships with agricultural industries.

Keywords: *Agricultural Science Education, Entrepreneurship, Skill Acquisition, Self-Reliance, Sustainable Agriculture, Delta State.*

Introduction

Promoting self-sufficiency, skill acquisition, and entrepreneurship among Nigerian youngsters necessitates sustainable agricultural science education. Learners may acquire the abilities required for agricultural production, processing, marketing, and company management by merging theoretical understanding with hands-on instruction. In order to meet the rising demand for self-reliance among Nigerian youth, combat unemployment, and alleviate poverty, sustainable agricultural science education may be crucial. Despite the fact that agriculture continues to be a significant source of income and livelihood in Nigeria, young people need more than just theoretical information to fully utilize the business. They require entrepreneurial, technical, and practical abilities that will enable them to launch companies, generate jobs, and advance the agricultural sector. Dimelu, Obazi, Okoronkwo, and Chah (2024) stated that, despite a lack of practical exposure remaining a serious obstacle, agricultural entrepreneurship education may promote young graduates' growth in Southeast Nigeria.

Learners' capacity and self-assurance in forging opportunities for themselves are greatly enhanced by skill development. Students may learn about crop production, livestock farming, agro-processing, farm management, marketing, and value addition via agricultural science teaching. Self-employment and income generation are two options that these talents may open up. Ordu and Nnodim (2024) discovered that agricultural education gave

final-year students at Rivers State University the necessary business management, inventive, production, and technical abilities for entrepreneurship. Additionally, they emphasized the necessity of sufficient training facilities and initiatives that foster self-sufficiency.

Also, Adeniran, Ademola, and Oyegbami (2024) investigated the entrepreneurial abilities that South-West Nigerian agricultural education students would need to engage in oil palm production enterprises. The significance of supplying students with entrepreneurial and production-related skills was underscored by their research. This suggests that agricultural education should be integrated with actual business operations in order for students to understand how to apply the knowledge and abilities they gain to create and run agricultural enterprises. According to Abasilim, Onyewuchi, and Inya (2025), agricultural education is also important for developing an entrepreneurial attitude. The research they conducted revealed that agripreneurial education had a favorable correlation with students' inclination towards entrepreneurship and their enthusiasm for farming. Nevertheless, a lack of practical experience and restricted access to seed capital were identified as potential deterrents for youth pursuing agricultural enterprises. This highlights the necessity for agricultural education programs to offer practical experiences and support for aspiring entrepreneurs in addition to knowledge.

The teaching of sustainable agricultural science should, in general, combine knowledge, practical abilities, originality, and entrepreneurial spirit. Students require opportunities to engage in actual agricultural enterprises, enhance business skills, and take part in hands-on agricultural activities. These encounters may boost their confidence and prepare them for entrepreneurship. As a result, bolstering the acquisition of agricultural abilities and entrepreneurial education can assist Nigerian youngsters in becoming job creators rather than relying solely on paid employment. This may help Nigeria establish sustainable agricultural businesses, improve livelihoods, create jobs, and stimulate economic development over time.

The agricultural knowledge and abilities acquired by graduates of agricultural education programmes in Nigerian universities were studied in a connected study by Ibe, Njoku, Nwabueze, Ugwa, and Udom (2025). Graduates' interest in agripreneurship and the growth of pertinent agricultural skills were shown to be strongly related to agricultural education

in the study. What students study and the abilities they acquire throughout their education may affect their readiness to establish agricultural firms, according to the research. Therefore, the researchers advised including more hands-on instruction and entrepreneurship-related activities in agricultural education curricula. Since theoretical information alone may not be sufficient to effectively operate a business, practical expertise is crucial for the success of any agricultural venture. Bassey, Ani, Ogbonna, and Mgbemena (2025) studied the production abilities that agricultural education graduates need to be entrepreneurs in the broiler business in Southeast Nigeria. Their findings highlighted the importance of graduates developing adequate production and management abilities to help them establish and run agricultural businesses successfully.

Skill acquisition is important even outside of farming education. Awoniyi, Owolabi, and Ige (2025) looked into skill acquisition programs at Lagos State universities, with a concentration on topics including entrepreneurship education, online learning, and internships. These types of training, according to their research, may help students acquire valuable entrepreneurial abilities and get them ready for self-reliance. Likewise, Odums-Naboth and Ejimaji (2025) found that students' acquisition of entrepreneurial skills at the Federal College of Education (Technical) in Asaba, Agbor-Obi, Warri, Kwale, in Delta State, may enhance employability and assist young people in becoming more self-reliant. Tijani and Adeduyigbe (2025) also stressed the value of education and skills development in encouraging self-reliance. They pinpointed technology innovation, skills development, and education as crucial elements in enhancing Nigerians' financial prospects and fostering national growth in their analysis of science education and self-sufficiency in Nigeria. Since contemporary agriculture needs students to have technological knowledge, creativity, business acumen, and the capacity to adjust to shifting market conditions in addition to farming abilities, this is extremely pertinent to agricultural science education. Agricultural science education must therefore keep up with the changes in the agricultural industry. Teaching should incorporate digital approaches to marketing and business management, current technologies, creative manufacturing processes, agro-processing, and agricultural gear. By giving students a chance to practice these abilities, they may be able to see business possibilities along the agricultural value chain instead of only concentrating on primary farming (Chah et al. 2024).

In general, the growth of self-reliance is closely related to skill acquisition, entrepreneurship, and agricultural science education. Practical skill acquisition allows students to apply their knowledge, while education offers the information necessary to comprehend agriculture. Entrepreneurship education, in turn, allows them to recognize opportunities and convert their abilities into successful enterprises. Ibe et al. (2025) opined that graduates are more likely to create jobs and found sustainable agricultural businesses when these sectors are supported with enough infrastructure, hands-on experience, industry exposure, mentorship, and access to funding. Learners' ability to become self-sufficient may be constrained by obstacles like a lack of training facilities, funding, and industry exposure, as well as the disparity between classroom instruction and actual agricultural business practices, despite these possibilities. Improving training resources, increasing cooperation with agricultural industries, and offering sufficient financial and mentoring assistance would all help overcome these issues and strengthen practical learning. These programs can boost self-sufficiency, foster employment, and aid in the development of sustainable agricultural businesses in Nigeria.

Statement of the Problem

Agriculture remains an important part of Nigeria's economy, providing food, income and employment opportunities for a large number of people. However, unemployment and the difficulty of finding stable sources of income continue to affect many young people and graduates. Agricultural science education is expected to help address this problem by giving learners the knowledge, practical skills and entrepreneurial abilities needed to participate meaningfully in the agricultural sector. Despite this expectation, some learners still leave school without adequate practical and entrepreneurial skills to establish and manage agricultural businesses successfully. A major concern is the limited opportunity for learners to gain practical experience and work with modern agricultural facilities and technologies. In some educational institutions, greater attention may be given to theoretical instruction than to hands-on activities. As a result, students may have difficulty applying what they learn to areas such as crop production, livestock farming, agro-processing, marketing and farm business management. This disconnect between classroom learning and practical agricultural activities may reduce their readiness for self-employment.

Another problem is the need to strengthen entrepreneurship and skills acquisition within agricultural science education. Learners need more than knowledge of agricultural production. They also need to know how to identify business opportunities, manage resources, use appropriate technologies, add value to agricultural products and respond to changes in consumer and market demands. When these skills are not adequately developed, graduates may continue to depend mainly on salaried employment rather than creating their own businesses and employment opportunities for others. Financial limitations, inadequate mentorship, limited industry exposure and insufficient access to relevant training can also make it difficult for graduates to turn their agricultural knowledge into sustainable businesses. Stronger relationships between agricultural education institutions and industries could help address some of these challenges by providing students with industrial training, internships, mentorship and exposure to current agricultural practices. The main concern, therefore, is whether agricultural science education is adequately preparing learners with the practical, entrepreneurial and technical skills required for self-reliance. It is against this background that this study focuses on sustainable agricultural science education, entrepreneurship and skill acquisition for self-reliance in Nigeria, with emphasis on strengthening practical learning, entrepreneurship development and skills that can enable learners and graduates to create and sustain productive agricultural enterprises.

Purpose of the Study

The main purpose of this study is to examine sustainable agricultural science education, entrepreneurship and skill acquisition for self-reliance in Delta State, Nigeria. Specifically, the study seeks to:

- i. Determine the extent to which agricultural science education provides learners with the knowledge and practical skills required for self-reliance in Delta State.
- ii. Examine the extent to which entrepreneurship education and skill acquisition enhance learners' ability to establish and manage sustainable agricultural enterprises in Delta State.

Research Questions

The study was guided by the following research questions:

- i. To what extent does agricultural science education provide learners with the knowledge and practical skills required for self-reliance in Delta State?
- ii. To what extent do entrepreneurship education and skill acquisition enhance learners' ability to establish and manage sustainable agricultural enterprises in Delta State?

Research Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

H₀₁: There is no significant difference between the mean responses of agricultural science educators and students on the extent to which agricultural science education provides learners with the knowledge and practical skills required for self-reliance in Delta State.

H₀₂: There is no significant difference between the mean responses of agricultural science educators and students on the extent to which entrepreneurship education and skill acquisition enhance learners' ability to establish and manage sustainable agricultural enterprises in Delta State.

Literature Review

The study adopted Human Capital Theory developed by Theodore Schultz (1961).

Human Capital Theory

The Human Capital Theory, developed by Theodore Schultz (1961) and later expanded by Gary Becker (1964), views education and training as investments that improve an individual's knowledge, skills, competence and productivity. The theory is based on the idea that people who acquire relevant education and training are more likely to perform effectively, secure better economic opportunities and improve their capacity to earn a living. The theory is relevant to this study because agricultural science education provides learners with both theoretical knowledge and practical skills that can be applied to agricultural activities. Through training in crop production, livestock production, fisheries, agro-processing, farm management and agricultural marketing, learners can acquire competencies that prepare them for employment as well as self-employment. Human Capital Theory also explains the importance of skill acquisition and entrepreneurship

education in promoting self-reliance. Learners who acquire practical agricultural and entrepreneurial skills are more capable of identifying business opportunities, managing resources, using appropriate technologies and establishing agricultural enterprises. In this way, investment in agricultural education and training can improve productivity and increase the ability of graduates to create income-generating opportunities.

The Human Capital Theory is relevant to this study because it explains how education, training and skill acquisition can improve individuals' productivity, employability and capacity for self-reliance. The theory views the knowledge, skills and competencies gained through education as valuable resources that can help individuals participate effectively in economic activities. In the context of this study, agricultural science education serves as an investment in learners by providing them with relevant knowledge and practical skills in areas such as crop production, livestock farming, agro-processing, farm management and marketing. These skills can prepare learners to either secure employment or establish their own agricultural enterprises. The theory also supports the importance of entrepreneurship and practical skill acquisition. When learners are given adequate training and opportunities to apply what they have learned, they are better able to identify business opportunities, manage resources, adopt improved agricultural practices and develop income-generating ventures. Thus, the acquisition of agricultural and entrepreneurial skills can strengthen learners' ability to become self-reliant rather than depending solely on paid employment.

Therefore, Human Capital Theory provides a suitable foundation for this study because it connects agricultural science education, entrepreneurship, skill acquisition and self-reliance. It suggests that investing in the education and practical training of agricultural learners can improve their competencies, productivity and capacity to establish sustainable agricultural enterprises. The theory is particularly appropriate for this study because it connects education, skills development, entrepreneurship and self-reliance. Agricultural science education provides the knowledge needed to understand agricultural activities, while skill acquisition enables learners to put that knowledge into practice. Entrepreneurship education further helps them to identify opportunities and turn their knowledge and skills into productive ventures. Based on this perspective, the Human Capital Theory provides a suitable foundation for examining how agricultural science education, entrepreneurship and skill acquisition can contribute to self-reliance in Nigeria.

When learners receive quality education, practical training and entrepreneurial skills, they are more likely to establish sustainable agricultural businesses, create employment and contribute to the development of the agricultural sector.

Conceptual Framework

Concept of Agricultural Science Education

Agricultural science education focuses on giving learners the knowledge, practical skills and attitudes needed to understand agriculture and apply what they learn to real-life situations. It covers areas such as crop production, animal production, fisheries, farm management, agro-processing, agricultural marketing and environmental sustainability. In Nigeria, agricultural science education is important because agriculture provides food, employment and income for a large part of the population. The purpose of agricultural science education should go beyond preparing learners for examinations or formal employment. It should also help them develop practical and entrepreneurial skills that can enable them to become self-reliant. Chah, Okoronkwo, Obazi and Dimelu (2024) stressed the importance of agricultural entrepreneurship education in creating opportunities for young people. However, they also noted that learners need adequate practical exposure to enable them to apply the knowledge acquired in school.

Agricultural Science Education and Self-Reliance

Self-reliance can be understood as the ability of an individual to use acquired knowledge, skills and available resources to create opportunities and meet personal and economic needs. Agricultural science education can promote self-reliance by exposing learners to practical activities that can later be developed into income-generating ventures. Training in crop production, livestock farming, fisheries, agro-processing, farm management and marketing can provide learners with useful skills for both employment and self-employment. Nnodim and Ordu (2024) found that agricultural education contributes to the development of production, technical, innovative and business-management skills among students. Such skills can increase learners' confidence and prepare them to establish and manage agricultural enterprises. In the same way, Ibe, Njoku, Nwabueze, Ugwa and Udom (2025) reported a relationship between agricultural education, agricultural skill acquisition and graduates' intention to engage in agripreneurship. This indicates that learners who

acquire relevant knowledge and practical skills may be more prepared to consider agriculture as a means of earning a living and becoming self-reliant.

Entrepreneurship Education and Agricultural Development

Entrepreneurship education helps learners develop the ability to recognize opportunities, generate business ideas, manage resources and make appropriate business decisions. In agricultural science education, this is important because it encourages learners to view agriculture not only as food production but also as an area where businesses can be created. There are many entrepreneurial opportunities in agricultural production, processing, storage, transportation, marketing and value addition. Abasilim, Onyewuchi and Inya (2025) found that agripreneurial education was positively related to the development of an entrepreneurial mindset among agricultural science students. However, they also identified inadequate practical training and limited access to start-up funds as challenges that may discourage students from starting agricultural businesses.

This shows that entrepreneurship education should be supported with practical experiences. Learners should be encouraged to prepare simple business plans, participate in small agricultural projects, practise marketing and interact with successful agricultural entrepreneurs. These activities can help them understand how agricultural knowledge can be turned into actual business opportunities.

Skill Acquisition and Self-Reliance

Skill acquisition is an important aspect of agricultural science education because it helps learners move from theoretical understanding to practical application. Skills in agricultural production, processing, marketing, farm management and the use of modern agricultural technologies can improve learners' ability to create employment for themselves and others. Bassey, Ani, Ogbonna and Mgbemena (2025) emphasized the importance of production and management skills among agricultural education graduates who intend to establish agricultural enterprises. Their study suggests that general knowledge of agriculture may not be sufficient for successful enterprise development. Graduates also need specific practical skills that can help them manage production and business activities effectively. Similarly, Awoniyi, Owolabi and Ige (2025) highlighted the contribution of skill-acquisition activities, including internships, online learning and entrepreneurship

education, to the development of entrepreneurial abilities and preparation for self-reliance. Agricultural education institutions should therefore ensure that the skills taught are relevant to the realities of employment and agricultural enterprise development.

Practical Training and Industry Exposure

Practical training is necessary for preparing agricultural science learners for life after school. Although classroom instruction provides important theoretical knowledge, learners also need opportunities to apply that knowledge in actual agricultural settings. Activities such as industrial attachment, internships, field trips, farm demonstrations and practical projects can help bridge the gap between theory and practice. Ademola, Oyegbami and Adeniran (2024) emphasized the importance of entrepreneurial and production skills among agricultural education students interested in agricultural enterprises. Practical exposure can help learners understand the realities of agricultural business, improve their confidence and develop their ability to make decisions. Working with agricultural industries can also expose learners to current technologies, production techniques, management practices and market requirements. Such interaction can benefit both students and educational institutions by helping schools understand the skills that are currently needed in the agricultural sector.

Agricultural Science Education and Self-Reliance in Delta State

Delta State has considerable potential for agricultural enterprise development through activities such as crop production, livestock farming, fishing, aquaculture and agro-processing. These areas provide opportunities for young people to generate income and become self-reliant through agricultural businesses. However, the availability of agricultural resources alone does not guarantee successful enterprise development. Learners require appropriate knowledge, practical skills, entrepreneurial abilities and technological awareness to take advantage of these opportunities. They may also need access to finance, mentorship and relevant business support.

Agricultural science education institutions in Delta State can contribute to self-reliance by strengthening practical farm activities, school-based enterprises, entrepreneurship programmes, industrial training and partnerships with agricultural businesses. Greater

attention to modern agricultural technologies and value addition can also help learners identify business opportunities beyond traditional farming.

Challenges Affecting Skill Acquisition and Self-Reliance

Despite the potential of agricultural science education to promote self-reliance, a number of challenges may limit its effectiveness. These include inadequate farm facilities, insufficient instructional materials, limited access to modern agricultural equipment, inadequate funding and insufficient opportunities for practical training. Limited access to start-up capital, mentorship and business support may also make it difficult for graduates to turn their acquired skills into sustainable enterprises. Another concern is the possible difference between the skills taught in educational institutions and those required by agricultural businesses. When institutions have limited contact with agricultural industries, learners may complete their studies without adequate exposure to current production methods, technologies and market practices. There is therefore a need for stronger collaboration among agricultural education institutions, government agencies, agricultural industries and other relevant organizations. Such partnerships can improve practical training, provide opportunities for mentorship and industrial experience, expose learners to modern technologies and support the development of sustainable agricultural enterprises. Overall, the literature indicates that agricultural science education, entrepreneurship and skill acquisition are closely related to self-reliance. Agricultural education provides the knowledge base, practical training develops useful competencies, while entrepreneurship education helps learners turn those competencies into productive ventures. Strengthening these areas, particularly within agricultural science education institutions in Delta State, can improve learners' preparedness for self-employment and contribute to sustainable agricultural and economic development in Nigeria.

Review of Empirical Studies

Chah, Okoronkwo, Obazi and Dimelu (2024) examined the influence of agricultural entrepreneurship education on youth development among graduates in South-East Nigeria. The study revealed that agricultural entrepreneurship education helped graduates develop useful entrepreneurial competencies. However, the researchers observed that inadequate practical exposure limited the extent to which graduates could apply these skills. They

therefore recommended greater emphasis on practical activities and enterprise-based learning in agricultural education.

Nnodim and Ordu (2024) investigated the skills acquired by final-year students through agricultural education at Rivers State University. The study found that students developed production, technical, innovative and business-management skills through their agricultural education. The researchers noted that adequate training facilities and instructional resources are necessary to strengthen these competencies and better prepare students for entrepreneurship and self-reliance.

Ademola, Oyegbami and Adeniran (2024) studied the entrepreneurial skills required by agricultural education students for participation in oil-palm production enterprises in South-West Nigeria. Their findings showed that students need both technical production skills and entrepreneurial competencies to participate successfully in agricultural businesses. The study emphasized the importance of making agricultural education more practical and closely related to actual enterprise opportunities.

Ibe, Njoku, Nwabueze, Ugwa and Udom (2025) examined the acquisition of agricultural knowledge and skills among graduates of agricultural education programmes in Nigerian universities. The researchers found a positive relationship between agricultural education, the acquisition of agricultural skills and graduates' interest in agripreneurship. They recommended that agricultural education programmes should provide more opportunities for experiential learning and entrepreneurship training to improve graduates' readiness for self-employment.

Bassey, Ani, Ogbonna and Mgbemena (2025) investigated the production skills required by agricultural education graduates for entrepreneurship in broiler production in South-East Nigeria. The study highlighted the importance of specific production and management competencies in establishing and operating agricultural enterprises. The findings suggest that graduates require practical skills that go beyond general agricultural knowledge if they are to manage agricultural businesses effectively.

Abasilim, Onyewuchi and Inya (2025) examined the relationship between agricultural education and the development of an agripreneurial mindset among agricultural science students in Nigeria. The study found that agricultural education was positively related to

students' entrepreneurial orientation. Nevertheless, inadequate practical training and limited access to start-up capital were identified as factors that could discourage students from venturing into agricultural businesses. The researchers therefore stressed the importance of practical training and appropriate financial support. Awoniyi, Owolabi and Ige (2025) investigated skill-acquisition programmes in universities in Lagos State, with particular attention to internships, online learning and entrepreneurship education. The findings indicated that these activities contributed to the development of entrepreneurial competencies and helped prepare learners for self-reliance. The study recommended that universities provide more practical and employment-oriented training to enable students to apply their skills in real-life situations.

Ejimaji and Odums-Naboth (2025) examined entrepreneurship skills acquisition among students of the Federal College of Education (Technical), Omoku, Rivers State. The study found that entrepreneurship education helped students develop employable skills and improved their prospects for becoming self-reliant. The findings suggest that practical entrepreneurship training can prepare learners not only for paid employment but also for creating and managing their own businesses.

Tijani and Adeduyigbe (2025) reviewed the contribution of science education to self-reliance in Nigeria. Their review identified skills development, technological innovation and relevant education as important factors in improving individuals' capacity for self-reliance and economic participation. The study emphasized the need for educational programmes to respond to changing technological and economic conditions by developing practical and innovative skills.

Sassi and Mshenga (2025) examined university-industry collaboration in agricultural faculties in Africa. Their study highlighted the importance of stronger relationships between universities and agricultural industries in improving students' practical experience, employability, innovation and exposure to workplace requirements. The researchers indicated that collaboration with industry can also support technology transfer and help educational institutions develop programmes that are more responsive to the needs of the agricultural sector.

Methodology

The study used a descriptive survey research design and was carried out in Delta State, Nigeria, in the South-South region of the country. The state is known for various agricultural activities, including crop farming, livestock production, fishing, aquaculture and agro-processing. The study population consisted of 1,200 male and female Agricultural Science Education students from selected tertiary institutions in Delta State. A sample of 200 students was drawn from the population. The respondents were selected through stratified random sampling, which helped to ensure that both male and female students were fairly represented in the study. A structured questionnaire was used to collect the required data. The questionnaire was developed based on the objectives and research questions of the study and focused on sustainable agricultural science education, entrepreneurship and skill acquisition for self-reliance in Delta State. It contained 10 items measured on a four-point Likert scale: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1. To determine the reliability of the instrument, a pilot test was conducted using respondents who were not part of the main study. The responses were analysed using Cronbach's Alpha, which produced a reliability coefficient of 0.82. This value indicated that the instrument had good internal consistency and was considered reliable for the study.

Analysis

Research Question One

To what extent does agricultural science education provide learners with the knowledge and practical skills required for self-reliance in Delta State?

Table 1 showed mean rating score of respondents on extent agricultural science education provide learners with the knowledge and practical skills required for self-reliance in Delta State (n=200)

S/N	Items	$\bar{X}$	SD	Decision
1	Agricultural science education provides learners with practical skills for establishing agricultural enterprises.	3.21	0.78	Accepted
2	Agricultural science education equips learners with knowledge of modern agricultural production techniques.	3.28	0.72	Accepted
3	Agricultural science education develops learners' ability to identify agricultural business opportunities.	3.14	0.83	Accepted
4	Practical farm activities help learners develop skills needed for agricultural entrepreneurship.	3.25	0.76	Accepted
5	Agricultural science education encourages learners to develop innovative ideas for agricultural enterprises.	3.08	0.86	Accepted
Grand Mean		3.19	0.79	Accepted

The findings in Table 1 show that agricultural science education provides learners with the knowledge and practical skills needed for self-reliance to a high extent. Since all five items recorded mean scores above the criterion mean of 2.50, they were all accepted. The grand mean of 3.19 shows that the respondents agreed that agricultural science education helps learners develop practical farming skills, understand modern agricultural practices, identify business opportunities, improve their entrepreneurial abilities and develop new ideas for agricultural activities.

Research Question Two

To what extent do entrepreneurship education and skill acquisition enhance learners' ability to establish and manage sustainable agricultural enterprises in Delta State?

Table 2 showed mean rating score of respondents on entrepreneurship education and skill acquisition enhance learners' ability to establish and manage sustainable agricultural enterprises (n=200)

S/N	Items	X	SD	Decision
1	Entrepreneurship education helps learners identify business opportunities in agriculture.	3.22	0.77	Accepted
2	Skill acquisition equips learners with practical skills for establishing agricultural enterprises.	3.26	0.74	Accepted
3	Entrepreneurship education improves learners' ability to manage agricultural resources effectively.	3.18	0.81	Accepted
4	Practical skills acquired through agricultural education improve learners' ability to manage agricultural enterprises.	3.24	0.76	Accepted
5	Entrepreneurship education and skill acquisition encourage learners to become self-reliant through agricultural enterprises.	3.20	0.79	Accepted
Grand Mean		3.22	0.77	Accepted

The findings in Table 2 show that entrepreneurship education and skill acquisition help learners develop the skills needed to establish and manage sustainable agricultural enterprises to a high extent. The mean scores for the five items ranged from 3.18 to 3.26, all of which were above the criterion mean of 2.50. The grand mean of 3.22 indicates that the respondents generally agreed that entrepreneurship education and skill acquisition provide learners with practical, managerial and entrepreneurial skills that can help them start and successfully manage agricultural businesses in Delta State.

Hypothesis One

H₀₁: There is no significant difference between the mean responses of male and female Agricultural Science Education students on the extent to which agricultural science education provides learners with the knowledge and practical skills required for self-reliance in Delta State.

Table 3 showed t-test on significant difference between the mean responses of male and female Agricultural Science Education students on the extent to which agricultural science education provides learners with the knowledge and practical skills required for self-reliance.

Gender	N	$\bar{X}$	SD	Df	t-cal	t-crit	Level of sign	Decision
Male	90	3.18	0.80	198	0.32	1.96	0.05	Accepted
Female	110	3.20	0.78					
Total	200							

The table shows that the male students had a mean score of 3.18, while the female students recorded a mean of 3.20. The calculated t-value of 0.32 is below the critical t-value of 1.96 at the 0.05 level of significance and 198 degrees of freedom. Therefore, the null hypothesis is retained. This result indicates that there is no significant difference between the responses of male and female Agricultural Science Education students on the extent to which agricultural science education provides learners with the knowledge and practical skills needed for self-reliance in Delta State.

Hypothesis Two

H₀₂: There is no significant difference between the mean responses of male and female Agricultural Science Education students on the extent to which entrepreneurship education and skill acquisition enhance learners' ability to establish and manage sustainable agricultural enterprises in Delta State.

Table 4 showed t-test on significant difference between the mean responses of male and female Agricultural Science Education students on the extent to which entrepreneurship education and skill acquisition enhance learners' ability to establish and manage sustainable agricultural enterprises

Gender	N	$\bar{X}$	SD	df	t-cal	t-crit	Level of sign	Decision
Male	90	3.20	0.78	198	0.41	1.96	0.05	Accepted
Female	110	3.24	0.76					
Total	200							

The result indicates that male students recorded a mean score of 3.20, whereas female students had a mean score of 3.24. The calculated t-value of 0.41 is below the critical value of 1.96 at the 0.05 level of significance with 198 degrees of freedom. Based on this result, the null hypothesis is retained. The finding shows that male and female Agricultural Science Education students have similar views on the extent to which entrepreneurship education and skill acquisition help learners develop the ability to establish and manage sustainable agricultural enterprises in Delta State.

Discussion of Findings

Extent Agricultural Science Education Provide Learners with the Knowledge and Practical Skills Required for Self-reliance

The findings in Table 1 show that agricultural science education plays an important role in equipping learners with the knowledge and practical skills needed for self-reliance in Delta State. All five items were accepted, with mean scores between 3.08 and 3.28, which are higher than the criterion mean of 2.50. The grand mean of 3.19 indicates that the respondents generally agreed that agricultural science education helps learners develop useful practical and entrepreneurial skills. The highest mean score of 3.28 was recorded for learners' knowledge of modern agricultural production techniques. This suggests that agricultural science education gives students exposure to current farming methods and practices that can improve their ability to engage successfully in agricultural activities. This finding is in line with Nnodim and Ordu (2024), who reported that agricultural education helps students develop production, technical, innovative and business-management skills that can support entrepreneurship and self-reliance.

Extent Entrepreneurship Education and Skill Acquisition Enhance Learners' Ability to Establish and Manage Sustainable Agricultural Enterprises

The results presented in Table 2 show that entrepreneurship education and skill acquisition help learners develop the abilities needed to establish and manage sustainable agricultural businesses in Delta State. All five items were accepted, with mean scores ranging from 3.18 to 3.26, which are above the criterion mean of 2.50. The grand mean of 3.22 indicates that the respondents generally agreed that entrepreneurship education and skill acquisition are important in preparing learners for agricultural enterprise development. The highest

mean score of 3.26 was recorded for the statement that skill acquisition equips learners with practical skills for setting up agricultural enterprises. This suggests that having hands-on skills is particularly important for students who want to pursue agricultural entrepreneurship. This finding agrees with Bassey, Ani, Ogbonna and Mgbemena (2025), who noted that agricultural education graduates need relevant production and management skills to establish and successfully run agricultural enterprises.

Conclusions

From the findings of the study, it is clear that agricultural science education, entrepreneurship education and skill acquisition can play an important role in helping Agricultural Science Education students become self-reliant in Delta State. Agricultural science education gives students the knowledge and practical skills they need to participate meaningfully in agricultural activities and prepare for possible self-employment. The study also shows that entrepreneurship education and skill acquisition help students identify agricultural business opportunities, develop useful practical skills, manage available resources and establish sustainable agricultural enterprises. The grand mean of 3.22 indicates that the respondents generally agreed that these areas can help students prepare for self-employment and become less dependent on limited salaried job opportunities.

Another important finding is the value of practical training. When students are given opportunities to participate in farm activities, enterprise management, agro-processing and marketing, they are able to put their classroom knowledge into practice. Such experiences can build their confidence and improve their ability to start and manage agricultural businesses. Agricultural science education in Delta State should place more emphasis on practical training, entrepreneurship education and skill acquisition. Improving these areas can equip students with the knowledge and abilities needed to become self-reliant, create employment, generate income and contribute to the sustainable development of agriculture in Nigeria.

Recommendations

- i. Strengthen practical training by providing students with more hands-on experience in farming, agro-processing, marketing and enterprise activities.

- ii. Promote entrepreneurship education to help students develop business, management and opportunity-identification skills for self-employment.
- iii. Improve agricultural facilities and equipment by providing modern tools, school farms, processing facilities and relevant instructional materials.
- iv. Strengthen industry partnerships to provide students with internships, mentorship, industrial training and practical exposure to agricultural businesses.

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