

TECHNICAL SKILLS REQUIRED BY STUDENTS OF AGRICULTURAL EDUCATION FOR SELF-EMPLOYMENT IN GOMBE STATE, NIGERIA

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Abstract

The study investigated technical skills required by agricultural education students for self-employment in Gombe state, Nigeria. Three research questions and three null hypotheses guided the study. The study adopted descriptive survey research design. The population for the study was 109 respondents comprising of 69 Male and 40 female students of agricultural education. The instrument for data collection was structured-questionnaire titled "Technical skills required by students of agricultural education for self-employment"—The instrument was validated by three experts from the Department of Science Education Federal University of Kashere, Gombe State whereas the reliability of the instrument was determined using Cronbach alpha method which yielded 0.72 reliability coefficient. Data collected were analyzed using mean for the research questions and t-test statistic for the hypothesis at 0.05% level of significance. The study found out those agricultural education students required skills in the areas of plant science, animal husbandry as well as soil science for self-employment. It was recommended among others that the Gombe-state Government should organize training and retraining program for agricultural education lecturers for effective instructional delivery.

Keywords: agricultural education, animal science, plant science, technical skills, students

Introduction

Education is the basis of a nation's economy. It is the appropriate bequest with which citizens shall be given in order to successfully exist in life and to remain productively capable in any economy. Education is also seen to be the robust step in paving the way for the citizenry of a nation to achieve their desired interest in this ever-evolving world (Hilppö & Rajala, 2023). Education has also been viewed as the instrument used to impact in-depth knowledge and understanding so as to enable the youths advance to new frontier of knowledge in different walks of life (Richardson & Milovidov, 2019). According to Dewi and Alam, (2020), education is a deliberate, systematic and continuous effort to transmit, generate or acquire knowledge, values, attitudes, skills or sensitivities as well as any learning resulting from that effort. Education is also defined as the act or process of educating or applying discipline on the mind or a process of character training (Singh, 2019). It is a dynamic instrument of change. Education is expected to affect or condition the social behaviour of the person being educated According to Nkrumah (2020) it is not a gain saying that a nation could be bailed from the syndrome of unemployment if a well-tailored education cum training is provided by the government of a country. One of the educational programs that are available in Nigerian tertiary

educational institutions in order to promote self-reliance is Agricultural Education.

Agricultural education is a type of vocational training involving the equipping of the learners with the knowledge and skills involved in productive agriculture (Haruna, et al., 2019). Agricultural education is the transmission or communication of ideas, principles and beliefs about agriculture to a group of people to educate them about agriculture and its operation (Burton, 2020). According to Jeong and Choi (2020), Agricultural education could be defined as a process of imparting knowledge, skills and attitudes in agriculture to the learner at any level. Therefore, agricultural education can be defined the transmission of knowledge and skill involved in productive agriculture. Different forms of agricultural education are prevalent. It involves the training of both the head and the hands of the learners. A change in learner is equipped with both the educational and agricultural knowledge (i.e the development of the three domains; cognitive, affective and psychomotor).Agricultural education entails the use of scientific knowledge in the teaching and learning of food production through the acquisition of knowledge of crop production, livestock management, soil and water conservation and other associated benefits for industrial and human development (Otu, et al., 2018). It is a type

of vocation that emphasizes preparation and participation in an occupation for social value (Passow & Passow, 2017). Contrary to general education, it is skill-oriented. Apart from being trained as a teacher, agricultural education also prepares individual for self-reliance and job creation. Agricultural education programme is tied with the national philosophy on agriculture for self-reliance. Agriculture education is the main way of making a living either as pure subsistence farmers, with a little semi-commercial farming or as agricultural science teachers. To achieve objective of the program therefore, students of agricultural education required certain technical skills for self-employment.

Skill is defined as the expertness, practical ability, dexterity possessed by an individual (Idipado, 2021). According to Camilli and Hira (2019), the skill concept was widening to include 'the ability to perform a specific manipulative occupational task. Skill is typically defined as "the learned ability to bring about pre-determined results with maximum certainty; often with the minimum outlay of time or energy or both (Sewell & Wilkinson, 2019). Therefore, in this study, skill can be defined as the ability of an individual to perform a certain task. Macaulay (2020) stated that a person is said to have acquired a skill when he can finish a given piece of work at a given time with minimum errors. Birdi, et al. (2016) opined that skill is an individual's capacity to control elements of behaviour, thinking and feeling within specified contexts and within particular task domains. Skill is the practical/manipulative ability that one possesses that can grant him/her gainful employment. Technical skills are therefore all the practical skills that one can acquire for gainful employment after graduation. There are some technical skills that should be inculcated into the Agricultural Education students for employment in contemporary agricultural practices. These include; Information and Communication Technology (ICT), Innovation and Creativity skills, leadership skills, marketing skills and interpersonal skills are aimed to promote self-reliance, which is the central mandate of agricultural education. These skills are therefore required by students, especially graduating students in tertiary institutions.

Statement of the Problem

Agricultural education is a program that equips learners with practical skills for self-reliance. It aims to produce youths with skills to enable them be self-reliance, create jobs, wealth and enhance economic development. This is because the cardinal objectives of agricultural education centre on: Acquisition of skills and

competencies, training in general knowledge of agriculture, occupational intelligence etc. However, it is observed that graduates of Nigerian tertiary institutions including those of agricultural education prefer white collar job in establishments where they are given monthly pay. Unfortunately, the jobs seem not to be available as evidenced in the high level of unemployment. Successive governments have done much to eradicate the problem of lack of self-reliance, by making entrepreneurship education compulsory course in tertiary institution. Hence, tertiary institutions in Gombe State have contributed immensely to the development of entrepreneurial centers to assist students in the institutions to acquire the right skill for job creation for themselves on graduation. Still, much hasn't been achieved on the part of students. This is evident in the increased rate of unemployed-graduate roaming the street with files looking for government or private paid job. Graduates of vocational agricultural education in the state, who are supposed to be job creators, are now job seekers irrespective of entrepreneurial aims and objectives in tertiary institutions. The frightening rate of unemployment among agricultural education graduates and the lack of technical skills it portrays among these graduating students constitute a problem for this study. In light of these observations, the researchers—investigated technical skills required by agricultural education students for self-employment in Gombe State.

Objectives of the Study

The general objective of the study was investigate the technical skills required by students of agricultural education for self-reliance in Gombe state Nigeria, while the following specific objectives will guide the study

1. To determine Plant Science skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State.
2. To determine Animal husbandry—Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State.
3. To determine Natural Resource/Soil management Skills required for self-reliance by agricultural education graduating students in tertiary institutions in Gombe State.

Research Questions

1. What are the Plant Science Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State?

2. What are the Animal Science Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State?

3. What are the Natural Resource/Soil Skills required for self-reliance by agricultural education graduating students in tertiary institutions in Gombe State?

Hypotheses

1. There is no significant difference in the mean rating of male and female agricultural education students on the Plant Science Skills required for self-reliance in tertiary institutions in Gombe State.

2. There is no significant difference in the mean rating of male and female agricultural education students on the Animal Science Skills required for self-reliance in tertiary institutions in Gombe State.

3. There is no significant difference in the mean rating of male and female agricultural education students on the Natural Science Skills required for self-reliance in tertiary institutions in Gombe State

Research Methodology

The study adopted a survey research design. Survey research as stated by Queiros, et al. (2017) is one in which a group is studied by collecting and analyzing data from a sample considered to be representative of the population or the entire population when not too large to be managed and comparing what is obtained with the predetermined standards. The design was suitable for the study since information was solicited from Agricultural Education students through the use of questionnaire.

The population for this study was all the students of agricultural education, and using simple random sampling a sample of 109 respondents comprising 69 male and 40 female agricultural Education students was drawn from the two tertiary

Table 1: Mean Analysis of the Plant Science Skills Required by Agricultural Education Students for Self-reliance in Tertiary Institutions in Gombe State

S/N	Plant Science Skills Required: Students' ability to:	Mean	SD	Remarks
1	Prepare a seedbed	3.60	0.79	Highly Required
2	Transplant seedlings	3.37	0.90	Moderately Required
3	Propagate a plant from a cutting	3.71	0.89	Highly Required
4	Calculate and mixed fertilizer	3.56	0.92	Highly Required
5	Use landscape and garden equipment	3.50	0.88	Highly Required
6	Develop irrigation schedule	3.48	0.77	Moderately Required
7	Prevent disease in plants	3.49	0.91	Moderately Required

Data presented in Table 1 revealed items 2,6 and 7 had their grand means ranging from 3.37 to 3.49 which are within the range of 2.50 to 3.49. This

implies that the items are the plant science skills moderately required by agricultural education students in tertiary institutions in Gombe State for self-reliance by agricultural education students in tertiary institutions in Gombe State (Federal College of Colleges of Education (T) and Federal University Kashere in Gombe State). The instrument was subjected to face validation by three lecturers from the Department of Agricultural Education, Faculty of Vocational and Technical Education, University of Nigeria, Nsukka. Each lecturer was served with a copy of the instrument and was requested to read through each item for the purpose of identifying ambiguous statement and offer suggestions for improving the instrument. The comments and inputs of the lecturers were used to produce the final document of the instrument. The instrument was also subjected to reliability test, using Cronbach alpha method to determine the internal consistency which yielded a coefficient of 0.72.

Data collected for the study were analyzed using the Mean to answer the three research questions. Any item whose Mean ranged from 3.50 and above was regarded as highly required, any item whose Mean ranged from 2.50-3.49 was regarded as moderately required, any item whose Mean ranged from 1.50-2.49 was regarded as slightly required while any item whose mean ranged from 0.50-1.49 was regarded as not required. Similarly, test was used to test the null hypotheses at 0.05 level of significance using SPSS software (version 29). Any null hypothesis whose p-value was greater than 0.05 level of significance ($p > 0.05$) was accepted while null hypothesis was rejected when the p-value was less than 0.05 level of significance ($p < 0.05$).

Results

Research Question 1: What are the Plant Science Skills required by agricultural education students for self-reliance in tertiary institutions in Gombe State?

implies that the items are the plant science skills moderately required by agricultural education students in tertiary institutions in Gombe State for self-

employment while items 1, 3, 4 and 5 had their means ranging from 3.50 to 3.71. This implies that the items are the plant science skills highly required by agricultural education students in tertiary institutions in Gombe State for self-employment.

Table 2: t-Test Analysis of the Differences between Male and Female Agricultural Education Students on the Plant Science Skills Required for Self-Reliance

Skills	Status	N	Mean	Std. Dev.	Df	t-cal	p-value
Plant science skills	Male students	60	28.6	3.7	107	2.19	0.01
	Female students	49	26.4	4.1			

The table above showed that the p-value of the item is less than 0.05 level of significance at 107 degrees of freedom. This implies that there is significant difference in the mean responses of the respondents on the plant science skills required by agricultural education students in tertiary institutions in Gombe State for self-employment.

Table 3: Mean Analysis of the Animal Science Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State

S/N	Animal Science Skills: Students' Ability to	Mean	SD	Remark
1	Handle animals	3.61	0.78	Highly Required
2	Exercise care to an animal	3.59	0.81	Highly Required
3	Maintain livestock facility	3.50	0.88	Highly Required
4	Calculate rations using Pearson square	3.54	0.75	Highly Required
5	Treat minor animal injury	3.71	0.81	Highly Required
6	Treat minor animal illness	3.51	0.90	Highly Required

Data presented in Table 4 revealed all the items had their grand means ranging from 3.50 to 3.71 which are within the range of 3.50 to 5.00. This implies that all the items are the animal science skills highly required by agricultural education students of tertiary institutions in Gombe State for self-employment.

Table 4: t-Test Analysis of the Differences between Male and Female Agricultural Education Students on the Animal Science Skills Required for Self-Reliance

Skills	Status	N	Mean	Std. Dev.	Df	t-cal	p-value
Animal Science Skills	Male students	60	27.8	3.2	107	2.72	0.03
	Female students	49	24.1	3.8			

The table above showed that the p-value of the item is less than 0.05 level of significance. This implies that there is no significant difference in the mean responses of the respondents on the animal science skills required by agricultural education students of tertiary institutions in Gombe State for self-employment.

Hypothesis 1: There is no significant difference in the mean rating of male agricultural education students and female agricultural education students on the plant science skills required by agricultural education students for self-reliance.

Therefore, the null hypothesis was not upheld.

Research Question 2: What are the Animal Science Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State?

Hypothesis 2: There is no significant difference in the mean rating of male agricultural education students and female agricultural education students on the Animal Science Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State

Therefore, the null hypothesis is rejected.

Research Question 3: What are the Natural Resource/Soil Science Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State?

Table 5: Mean Analysis of the Natural Resource/Soil Science Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State

S/N	Interpersonal skills: Students' Ability to	Mean	SD	Remark
1	Utilize field test for soil texture	3.57	0.84	Highly Required
2	Take a soil sample	3.61	0.79	Highly Required
3	Read and follow a soil report	3.58	0.69	Highly Required
4	Conduct a water test	3.50	0.73	Highly Required
5	Measure agricultural land	3.66	0.86	Highly Required
6	Plan a farmstead	3.74	0.68	Highly Required

Data presented in Table 5 revealed all the items had their grand means ranging from 3.50 to 3.74 which are within the range of 3.50 to 5.00. This implies that all the items are Natural Resource/Soil Skills highly required by agricultural education students of tertiary institutions in Gombe State for self-employment.

Hypothesis 3: There is no significant difference in the mean rating of agricultural education students and female agricultural education students on the Natural Resource/Soil Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State

Table 6: t-Test Analysis of the Differences between Male and Female Agricultural Education Students on the Natural Resource/Soil Skills required for self-reliance by agricultural education students in tertiary institutions in Gombe State

Skill	Status	N	Mean	Std. Dev.	Df	t-cal	p-value
Natural Resource/Soil Skills	Male students	60	26.3	4.6	107	2.64	0.02
	Female students	49	22.7	3.4			

The table also showed that the p-value of the item is less than 0.05 level of significance. This implies that there is no significant difference in the mean responses of the respondents on the Natural Resource/Soil Skills required by agricultural education students of tertiary institutions in Gombe State for self-employment. Therefore, the null hypothesis is rejected.

but few. The study's findings are also consistent with those of Ofili & Idris (2012), who conducted a study on the ICT skills possessed by vocational and technical education students in Edo State for self-sustenance. The findings revealed that students require basic online skills such as the ability to protect websites from hijackers and the ability to create websites and conduct business transactions, among other things.

Discussions

Plant Science Skills

Hypothesis one stated no significant difference in the mean rating of male agricultural education students and female agricultural education students on the plant science skills required by agricultural education students for self-reliance. The findings of the study are consistent with the findings of Osei et.al, (2022) who reported that skills such as transplanting seedlings, effective nursery care among others are essential for successful vegetable production. The authors also stated that students who learn farming skills in school continue to gain valuable experience that can be transferred to the working world, including performing tasks such as grafting, budding to mention

Animal Science Skills

Hypothesis two stated no significant difference in the mean rating of male agricultural education students and female agricultural education students on the animal science skills required by agricultural education students for self-reliance. These findings are in line with Wamatu et.al, (2021) who reported that handling livestock, livestock treatment and livestock are vital skills required for successful livestock fattening. The authors also stated that students who learn animal fattening skills in school continue to gain valuable experience that can be transferred to the working world even after graduation.

Natural Resource/Soil Science Skills

Hypothesis three stated no significant difference in the mean rating of male agricultural education students and female agricultural education students on the Natural Resource/Soil Skills required by agricultural education students for self-reliance. These findings are in line with Itelima et.al, (2018) who reported that soil skill is an essential ingredient for a profitable agricultural production.

Conclusion

Based on the findings of the study that technical skills such as plant science, animal science and natural are required by agricultural education students for productivity and self-employment.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. These institutions should as a matter of urgency lay emphasis on skills acquisition in Agricultural Education curriculum.
2. The state government should use the findings of this research as a base to organize seminars, conferences and workshops for training and retraining of lecturers in Agricultural Education for onward training of their students.

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