Asia-Africa Journal of Agriculture
A Publication of International Association for the Promotion of Asia-Africa Research
Vol. 1, 2022
DOI: 10.5281/zenodo.6257955
ISSN: 2814-0397

https://journals.iapaar.com/index.php/AAJMR

STUDENTS FIELD PERFORMANCE AND ENTREPRENEURIAL SKILL ACQUISITION LEVEL FOR SELF RELIANCE IN FISH FARMING TECHNOLOGY

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Abstract
The study assessed students' response level to field performance as indices for determining the development of entrepreneurial skill in pond fish farming for self-reliance. Two objectives, two research questions and two hypotheses directed the study. Completely randomized design was adopted for the study. The population of the study comprised of intact class 36 sampled of 300 level students of Agricultural Education. The study was conducted at Agricultural Education fish farm unit, University of Uyo, Akwa Ibom State. A 12-field performance task structured instrument with a five point rating options was used for data collection. The instrument was subjected to content validation by five validates from the Department of Agriculture Education and Fisheries from the University of Uyo. Cronbach Alpha was used to determine the reliability of the instrument and a correlation index of .810 was obtained. Mean was used in answering research questions, while t-test was used in testing hypotheses at .05 level of significance. The finding revealed that there is no significant difference in the mean rating of lecturers/technologists in students' level of field performance task in fish feeding, fish sorting and development of entrepreneurial skill in pond fish farming technology for self-reliance.

Keywords:- Assessment, field performance task, entrepreneurial skills, self-reliance, pond fish farming.

Introduction

Pond fish farming is the technology of cultivation of fish in naturally existing bodies of water; spring, river, streams, and man-made water enclosures known as pond. The choice of pond type, design and material for pond construction are usually determined by the location, the availability and accessibility of the material, the technical know-how level of the farmer, the financial power,and purpose of the farming and the intended scale of production. Udoh (2012).

According to Udoh, Ekanem and Offiong (2019), fish pond is constructed using varieties of raw materials that can hold and withstand large volume of water for a long period of time to enable fish cultivation .The commonly available and accessible materials used for pond construction include, clay, wood, net, bamboo, rubber, tarpaulin, cement, and sand. Clay is used in the construction of earthen pond, rubber for construction of plastic tanks, bamboo for the construction of bamboo pond, cement and sand for concrete pond, net for the demarcation of enclosure of shallow sections of natural water bodies of streams, rivers, springs. The demarcation is skillfully and technically handled by experience hands and experts in order to obtain the expected structural and functional design to effectively serve the purpose for productive pond fish farming.

The cultivation of fish in ponds requires and involves daily routine task and performance management activities. It begins with the skill of raising of broad stock, otherwise known as the parents stock of male and female of reputable characteristics that are adaptable to enclosed water environment. This is followed by the breeding, the hatching and the raising of fish seeds (fingerlings /juveniles),pond preparation, water impoundment/preparation, introduction of fish seeds into pond(stocking), fish feeding, fish sorting, fish safety, fish harvesting and the strategic marketing skills. The sequence of developmental and management skills in pond fish farming technology has its unique technological know-how and field performance tasks that must be learnt, practiced and acquired for entrepreneurship in pond fish farming. Mukta (2017), and Emeya and Udukeke (2018),

all observed that entrepreneurial skills are the manipulative technicalities that are learned both in human and material resources in a production process so as to minimize cost and maximize profit.

The entrepreneurial skills in fish farming and pond management technology is one of the agricultural skill areas taught in schools including higher institutions: university, college of education, polytechnic and other agriculture -oriented skills acquisition centers and programmes. In the university, the curriculum stipulates the teaching of agriculture through the integration of classroom instructions with field practical activities these are experimental and learner-centered, so as to enhance functional, productive and meaningful education for skill acquisition and self-reliance (FRN, 2013). Etuk, (2017) further stressed that the section 20 of the National policy on education provide the benchmark policy in curriculum delivery that teaching shall be participatory, exploratory, experimental and learner-centered for skill acquisition.

Skill acquisition, according to Akpe (2018) is education that focuses on the mastering of skills with emphasis on daily routine practice by the learners. Udoh and Job(2018) observed that skills acquisition are the heart of agricultural programmes, which can only be achieved through the integration of theory and field experience teaching approach as well as assessment of student practical experiences. The assessment of agricultural skills acquisition in the opinion of Kesiki, Amuche and Shimave (2014) involves the process of observing, describing, collecting, recording, scoring, and interpreting information about students learning. In line with the objective of providing functional education for skill acquisition and self -reliance, through routine practices, the students of Agricultural Education, University of Uyo, in the 2020/2021 academic session having been taught pond fish farming through the integration of classroom theoretical knowledge were exposed to field performance tasks assessment. In order to establish the effect and level of students response to the development and acquisition of entrepreneurial skill in pond fish farming for self-reliance. The students were directly engaged in daily routine sequential theories and field performance tasks in fish stocking, fish feeding, fish sorting and fish harvesting as well as strategic marketing management

technological practices. This was done, in order to ginger, elucidate, motivate and develop dynamic, pragmatic and functional education, directed toward enhancing full development of the right altitude, knowledge and skills in pond fish farming technology for self- reliance. Specifically, the study exposed students to fish stocking, fish feeding and fish sorting technological skills in pond fish farming.

Fish stocking according to Udoh and Job (2018), is the introduction of fish seed (fingerlings/juveniles) into pond water environment. Seeds of reputable characteristics obtained from fish hatchery, tested and proved of producing good quality fish seeds are stocked. Stocking is done at early mornings or late evenings to control mortality. The introduction of fish is followed by feeding. Fish feeding is the technology of supplying feeding materials to fish in the pond. Feeding materials supplied to fish in ponds are classified into two major groups: natural food and artificial (formulated) feed. The natural food are the organisms of plants and animals, in which their presence and availability in large number are to enhance pond water preparation and management practice known as pond fertilization. Pond fertilization is the application of organic or inorganic fertilizer to pond water to enhance the formation and growth of natural food collectively known as planktons. Planktons are of two kingdoms: the phytoplankton of the plant kingdom and zooplankton of animal kingdom. These organisms are formed during pond fertilization and are made available as natural food for fish especially at the fingerling stages. The compounded feed is the industrially branded customized fish feed sold in the market and fish related shopping malls. The feed are compounded using different varieties of feeding stuffs and pelleted into different sizes that suit the stages of fish development and growth, ranging from fingerlings to table size. The pelleted fish feed ranges from .05 millimeter to 9 millimeter in size commonly call 2mm, 4mm, 6mm, etc. Udoh, Offiong and Okoko (2019).

Fish sorting, in a way could be called test-cropping. It is a management practice of examining the well-being of stocked fish, growth, and the general performance of fish in pond. Field management

tasks in fish sorting include: Reduction of water in pond to view fish, harvesting, selection and grouping of fish according to growth rate (increase in body size) and re-stocking of fish in separate ponds based on the groupings (Udoh 2012). Sorting is carried out two to three months after stocking. The variation in time frame however, depends on farmers' level of technological know-how in the management practices involves in pond fish farming, such as method of feed management, water quality and fertilization, stocking density, selection of fish species, and adaptability level of stocked fish to pond environment. Fish sorting management practices is very crucial in pond fish farming technology. The grouping and re-stocking of fish of the same size gives room for equal opportunities to access feed. As well as controls fish cannibalism, check overstocking and prevent water pollution thereby promoting fast and uniform growth of fish. (Udoh, 2012).

Fish feeding and sorting are basic managerial technological skill practices in pond fish farming. Its activities and performance directly influence and determine productive fish farming technology. Hence, student acquisition and development of feeding and sorting skill becomes imperative in developing entrepreneurial skills in pond fish farming.

Statement of the problem

Acquisition of entrepreneurial skill in pond fish farming requires the full development of an individual's learning domains: The cognitive, the affective and the psycho-productive for skill acquisition, and self –reliance. The researchers observed that majority of students studying agriculture in higher institution seems not to understand and appreciate the relevance of practical agriculture, through field experience. It is not uncommon to see students during farm practical demonstrating some form of avoidance, cunny, and escaping altitudes some even to the extent of staying away from school if planning for field experience is disclosed. Some students see practical agriculture as punishment, labour- intensive, strenuous, or difficult task. In other words, most students show low interest and unwillingness to participate actively in the discharge of any form of farm practical assigned during the field experience.

The study is therefore design to assess the field performance response levels of Agricultural education students and the development of entrepreneurial skills in pond fish farming technology for self-reliance.

Purpose of the Study

The purpose of the study was to determine the field performance response level of agricultural Education students and the development of entrepreneurial skills in pond fish farming technology. Specifically the study was designed to;

1. Determine the response level of agricultural education students to fish feeding performance tasks and the development of entrepreneurial skills in pond fish farming technology.
2. Determine the response level of agricultural education students to fish sorting field performance tasks and the development of entrepreneurial skills in pond fish farming technology.

Research Questions

1. What are the response levels of Lecturers/Technologists and agricultural education students to fish feeding performance tasks and the development of entrepreneurial skills in pond fish farming technology.
2. What are the response levels of Lecturers/Technologists and agricultural education students to fish sorting performance task and the development of entrepreneurial skills in pond fish farming technology.

Research Hypotheses

Hypothesis 1

There is no significant difference between the mean rating of lecturers/ technologists and students' response to their level to field performance tasks in fish feeding and development of entrepreneurial skill in pond fish farming technology.

Hypothesis 2

There is no significance difference between the mean rating of lecturers/ technologists and mean rating of students' levels of response to fish sorting field performance tasks and the development of entrepreneurial skills in pond fish farming technology.

Area of the Study

The research was conducted at the fish farm unit of the Department of Agricultural Education, University of Uyo. The university is located in Uyo the capital of Akwa Ibom State, Nigeria. Akwa Ibom State is located between latitudes 4° 32' and 5°33'north and longitudes 7° 35' and 8° 25' east.

Design of the Study

Completely Randomized Design was adopted for the study. This design was appropriate as all the ponds had equal chance of students being directly involved in them for field practical experience for pond fish farming management skill and field performance.

Population

The population of the study consisted of 255 respondents made up of the 250 undergraduate students of the Department of Agricultural Education, University of Uyo in the 2020/2021 academic session, three course lecturers and two technologists.

Sample and Sampling Technique

An intact class of 36 students of the 300 level was purposively sampled for the study. The intact class was suitable for the study because, "fish farming and pond management in school" is one of the courses offered in 300 level of the Department. Also the three lecturers and two technologists were purposively sampled for the study because of the small number involved. Altogether a sampled of 41 respondents were used for the study.

Instrumentation

Fish farming and pond management instructional package (FPMS) was developed for classroom theoretical instructions, on the principles, concepts, technicalities and practices in pond fish farming technology. While field performance skill task (FPST) was developed for collecting data on students' level of response to field performance tasks. The performance task instrument had two (2) sections A and B. Section A contained field performance task items in fish feeding. While section B contained field performance task items in fish sorting.

Validation of Instrument

The instruments were subjected to face and content validation by five experts in the area of the study, comprising of two experts in Agricultural Education, two in Fisheries and one in test and measurement. The corrections and modifications provided were incorporated into the final copies of the instruments.

Reliability of the Instrument

The instruments were administered to 30 students who formed parts of the population but not part of the sample using a test re-test method. Cronbach's Alpha was used to analyze the data and a reliability index of .810 was obtained.

Method of Data Analysis

Mean statistic was used to answer research questions while independent t-test was employed in testing the hypotheses.

Decision Rule

Decisions about students' level of response to field task performance were determined using the upper and lower limits scale. Nominal values were assigned to the students' level of response to field performance task using a five point rating scale of 5=very high level, 4=high level, 3=fair level 2=low level, and 1= very low level. The mean level of students field task performances were interpreted in relation to the real limit assigned values. The field performance task with mean values ranges of 4.50-5.00 were very high, 3.50-4.49 high, 2.50-3.49 fair, 1.50-2.49 low and 1.00-1.49 very low. The null hypotheses were accepted when the t-calculated were less than t-tabulated otherwise the null hypotheses were rejected.

Real limits of assigned values of rating for decisions on students' response to the field performance task and development of entrepreneurial skill in pond fish farming technology is as shown.

Assigned values	**Real Limit**	**Decision**
5	4.50-5.00	Very high level
4	3.50-4.49	High level
3	2.50-3.49	Fair level
2	1.50 -2.49	Low level
1	1.00 -1.49	Very low level

Experimental Procedures

The experimental group in intact- class 36 of students was exposed to both classroom theoretical knowledge and field performance task in fish, feeding, and sorting management practices in pond fish farming technology. The study lasted for five (5) months, it commenced on July 14, 2021 and lasted till December 2,2021. In the first two months the students were taught the technological skills in pond

fish farming integrating class room instructions and field practical experiences. The students were thereafter grouped in into seven groups to take turn in attending to the fish daily by providing feed, monitoring, sorting, safety, security and general wellbeing of the fish for the remaining three months, under close supervision.

The feeding was done twice daily, at early mornings and late evenings. The size and quantity of feed supplied was gradually increasing as the fish grew and increased in size. Sorting was carried out at the culturing duration of two and four month intervals as the fish were growing.

In the course of the study, students' level of response to field performance task on feeding and sorting were conducted, assessed and determined. The students were individually made to perform the field performance tasks in fish feeding and sorting based on the established rules and principles, taught and demonstrated. The students' level of task field performance were examined, assessed and determined by three lecturers (L) and two field technologists (T) who were assigned to oversee in the smooth running and management of the farm.

Each task performed correctly by student was scored 1 point, while students who were unable to perform the required tasks following the established guidelines and rules were scored zero (0). The mean score of students by the five examiners was calculated, decision about the students' level of response to field performance tasks in fish feeding and fish sorting were made in line with the real limit scale of measure.

Results

Research Question 1

What is the level of student response to field performance task in fish feeding and the development of entrepreneurial skill in pond fish farming technology?

Result of research question 1 are presented on table 1

Table 1: Mean scores of students' level of response to field performance tasks in fish feeding and the development of entrepreneurial skills in pond fish farming technology

N = 41

S/N	Fish feeding tasks	Mean	Std. Deviation	Remarks
1.	Demarcation of feeding spots/points in pond	4.78	0.42	VHL
2.	Careful scooping of feed to avoid droppings and wastage	4.22	0.42	HL
3.	Feeding the right size of feed in millimeter to commensurate the growth rate of fish.	4.11	0.46	HL
4.	Calculating the quantity of feed according to the average body weight of fish to avoid under or overfeeding.	4.78	0.54	VHL
5	Supplying of feeding stuff at demarcated feeding points	4.17	0.38	HL

Field study, 2021

Results on Table 1 shows the mean level of students' response on fish feeding performance task and development of entrepreneurial skills in pond fish farming technology. The result shows that the mean responses on three out of the five listed items fell within the category of 3.50-4.49 implying high level. However, two items have a mean response of which fell within the category of 4.50-5.00 implying very high level of response.

Research Question 2

What is the level of students' response to field performance tasks in fish sorting and development of entrepreneurial skills in pond fish farming technology.

Results of research question 2 are presented on table

Table 2: Mean scores of students' level of response to field performance tasks in fish sorting and the development of entrepreneurial skills in pond fish farming technology.

N = 36

S/N	Fish sorting tasks	Mean	Std. Deviation	Remarks
6.	Identification of differences in growth rate of fish	4.39	0.49	HL
7.	Opening of pond water out-let to reduce the volume of water to visualize the fish	5.00	0.00	VHL
8.	Careful handling and collection of fish into open containers using scooping net	4.11	0.32	HL
9.	Selection and grouping of fish according to increase in body size	4.39	0.49	HL
10.	Re-stocking of fish in selected pond according to the groupings	4.28	0.45	HL
11.	Refilling of pond with clean water 2/3 of the pond depth after re-stocking	3.67	0.59	HL
12.	Careful watching of fish movement after stocking to detect and arrest any abnormality	4.22	0.64	HL

Field study 2021

Results on Table 2 shows the mean level of students' responses on students fish sorting field performance tasks and development of entrepreneurial skills in pond fish farming technology. The result shows that the field performance task level of six out of seven items has mean rating between real limits in the range of 3.50-4.49 implying high level of performance while one item had a mean rating of 5.00 which imply very high level of field performance task in fish sorting.

Hypothesis 1

There is no significant difference between the mean rating of lecturers/ technologists and students' response to their level to field performance tasks in fish feeding and development of entrepreneurial skill in pond fish farming technology.

Table 3: t-test analysis of the response of Lecturers/ Technologists and mean rating of students' level of response to fish feeding performance task and development of entrepreneurial skills in pond fish farming technology

Items	N	$\bar{x}$	SD	df	t-cal	P	Decision at 0.05
Lecturers/ Technologists	5	4.34	0.40				
				39	1.20	1.51	Not Significant
Agricultural Education Students	36	4.50	0.48				

Table 3 shows the result of the t-test analysis of Lecturers/Technologists and mean rating of students' level of response to fish feeding performance task and development of entrepreneurial skills in pond fish farming technology. The result shows that the p-value exceeded the calculated t value at significant level of 0.05. On this basis, the null hypothesis was upheld implying that there is no significant difference between the mean rating of lecturers/Technologists and mean rating of students level of response to fish feeding performance task and development of entrepreneurial skills in pond fish farming technology.

Hypothesis 2

There is no significance difference between the mean rating of lecturers/ technologists and mean rating of students' levels of response to fish sorting field performance tasks and the development of entrepreneurial skills in pond fish farming technology.

Results of hypothesis 2 are presented on table 4.

Table 4: t-test analysis of the response of lecturers/Technologist and Mean rating of students' level of response to fish sorting field performance task and development of entrepreneurial skills in pond fish farming technology

Items	N	$\bar{X}$	SD	df	t-cal	P	Decision at 0.05
Lecturers/ Technologists	5	4.27	0.32				
				39	1.87	3.27	Not Significant
Agricultural Education Students	36	4.32	0.41				

Table 4 shows the result of the t-test of Lecturers/Technologists and mean rating of student's level of fish sorting field performance task and development of entrepreneurial skills in pond fish farming technology. The result shows that the p-value exceeded the calculated, t value at significant level of 0.05. On this basis, the null hypothesis was upheld implying that there is no significant difference between the mean rating of lecturers/Technologists and mean rating of students' level of response to fish sorting field performance task and development of entrepreneurial skills in pond fish technology.

Discussion of Result

The findings of the study in research question one, on fish feeding performance task reveals that the mean rating score of students' level of field performance in fish feeding ranges between the real limit ranges of 4.11-4.78. Identification of the pelleted size of feed in agreement with the size of fish (4.78), careful scoping of feed without dropping and wastage (4.22), calculating the quantity of feed to supply in accordance to the average of body weight and number of fish in pond (4.11), demarcation of feeding spots (4.78) and supplying of feed at the demarcated spots (4.17).

This showed that the average mean rating score of three out of five items had real limit range of 3.50-4.49 indicating high level of field performance, while two items had mean average score of range of 4.50 to 5.00 implying a very high level of field performance task. The inference is that the students

demonstrated high level of field performance task on fish feeding and development of entrepreneurial skills in pond fish farming technology. The findings is in line with the finding of Kesiki, Amuche, and Shimahe (2014) that one of the most useful approaches of determining the level of students skill acquisition is by giving a performance based test which are designed specifically to measure directly the actual job performance of a student in an area being taught.

The findings from research question two revealed that the mean of the field performance task items in fish sorting required to perform by students ranged from 3.67 to 5.00. identification of differences in growth rate of fish (4.39), Opening of pond water out-let channel to reduce the volume of water to visualize the fish (5.00), Careful collection of fish into open containers using scooping net (4.11), selection and grouping of fish according to increase body size (4.39), re-stocking in separate ponds according to the grouping (4.28), Refilling of pond with clean water 2/3 of the pond depth after re-stocking (3.67), Careful watching of fish movement after stocking to detect and arrest any abnormality (4.22). This showed that the level of six items had mean rating score between real limit ranges of 3.50-4.99 level of performance while one item had mean rating scoresof 4.50-5.00 indicating very high level of performance.

Results of the hypotheses studied showed no significant difference (0.05) for fish feeding and sorting performance tasks and development of pond fish farming technology.

The finding is in agreement with the findings of Udoh, Offiong and Etefia (2019) that when students are taught integrating classroom instructions and field experiences it enhances skill acquisition. The high level of students' performance in the demonstration of the field tasks upheld the hypothesis made that there is no significant difference in the mean score rating of lecturers and farm technologists on the level of students' performance on fish sorting skills and the development of entrepreneurial skill in pond fish farming technology. The inference is that the students demonstrated

high level of fish sorting performance task and consequently the development of entrepreneurial skill acquisition in pond fish farming technology.

Conclusion

The exposure of the students to both classroom instructions and field performance experiences on pond fish farming practices, enhances students high level of field practices in pond fish farming technology theory and practice. Also the high level of students response to the field performance tasks is an indication that entrepreneurial skills acquisition toward being employable or gainfully self-employed on graduation in accordance with the main objective of agricultural programmes, in schools of to impact in learners the practical experience skill to develop and enter into farming enterprise.

Recommendations

In line with the results of the study the following recommendations are made:-

1. The Federal Government in collaboration with National University commission should make available pond facilities in the university farms to reinforce the teaching and learning of fish farming with practical experiences and stimulate learners' interest in learning the contents in real life situation which is likely to enhance learners'participation and skill acquisition for self -reliance.
2. The National University commission through the University management should conduct field performance based test as a measure of assessing and determining students learning achievement and skill acquisition for self-reliance before graduation.
3. The federal government through the Ministry of education should on regular basis organize workshop and training on pond fish farming technology to update agricultural education lecturers on new technologies to improve learning in the university.

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