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STATUS OF FISHERY AND STUDENTS SKILLS GAPS EXPRESSED FOR COMPETENCIES IN FISHERY OCCUPATION IN PUBLIC SECONDARY SCHOOLS IN DELTA STATE NIGERIA

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ABSTRACT

The study investigated the Status of fishery and students' skills gaps expressed for competencies in fishery occupation in Public Secondary Schools in Delta State Nigeria. The study was an ex post facto descriptive survey research with two research questions answered and two hypotheses tested. The population was made up of 385 Fishery teachers and 5694 Fishery students in public secondary schools in Delta state. The study adopted a multi-stage sampling procedure and the samples for the study obtained with Slovin 1960 sample size formula were 196 Fishery teachers and 391 Fishery students in public secondary schools in Delta state. The instrument for data collection was a structured questionnaire which was validated by experts in measurement and evaluation and reliability was determined with test re-test, Pearson product-moment correlation coefficient, and Spearman-Brown proficiency formula was 0.73. Data analysis instruments deployed were mean and standard deviation to answer the research questions and t-test statistics to test the hypotheses. The study revealed that Fishery is taught as a science and not as a trade subject in Delta State public secondary schools, it also showed that agricultural science teachers double as Fishery teachers. It was equally known through the result of the study that the students have no knowledge of Fishery to take up Fishery occupation on graduation. The study recommends that Fishery should be taught as a trade subject, not as a science, specialized Fishery teachers should be recruited, and serving teachers should be sent on in-service courses. The students should be well instructed in Fishery skills to enable them to take up Fishery as a trade upon graduation.

Keywords: trade curriculum, fishery, status, knowledge gap, skill gaps

1.0 INTRODUCTION

Fish is a globally relished dietary component due to its metabolizability and health friendliness. Agbaka (2016) opined that fish is a highly valued dietary component because it is a rich source of protein, carbohydrates, healthy fats, vitamins, and minerals. Madibo (2017) states that fish is very important in the human diet because it has a large storage of ecosystem nutrients in their tissues which are very beneficial to human health, while Obanya (2019) surmised that fish is the healthiest food in the planet earth because it contains all the nutrients the body requires for its proper functioning. Fish contributes about 60 percent of the world's animal protein and the protein is superior to milk, egg, mutton, veal, and chevron protein (healthline.com, 2020). Taju (2017), Amede (2018), and Olayinka (2017) reiterated that fish

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is a very healthy food as it contains 16 - 30 proteins, higher than any other protein source, and also has vitamins minerals, and Omega-3 fatty acids. Food and Agricultural Organization (2018) reports that there has been increased growth in fish consumption all over the world and this has impacted the health of the global population. Abdulai (2016), Amodu (2018), and Odia (2019) believe that the rise in fish consumption globally is a result of the awareness of the digestibility of fish and the understanding that the amino acid in fish and shellfish are more bioavailable for the human body; A little quantity of fish can have a significant effect on human health (Samulson, 2016, Haris, 2019). For Odum & Odebala (2017), and Omede (2018) fish is reputed to be the cheapest source of good quality protein for the human populace.

Nigeria is a maritime country with over 858 km coastline and numerous inland waterways, fish production industry holds great potential to contribute significantly to the gross domestic product (GDP) and foreign earnings (Weaner, 2017, Okpanya, 2014). . However the country remains a net importer of fish (FAO, 2017). According to Adesina (2014), Audu (2016), Nanono (2020), and FAO (2017), Nigeria's fish demand is 2.7 million metric tonnes but produces only 0.8 million tonnes. The difference between demand and supply is filled with importation. Nigeria is the fourth greatest importer of fish globally (FAO, 2017). Importation of fish leads to a loss in foreign exchange and unemployment. Adesina (2014), Audu (2016), and the United States Agency for International Development (2018) revealed that Nigeria spends over 100 billion Naira about 625 million dollars on fish importation annually. Audu (2018) opines that the importation of fish means exporting employment and importing unemployment.

Nigeria's unemployment at the last quarter of 2021 is 33.32 percent (National Bureau of Statistics (2021) International Labour Organisation (2020) puts the unemployment rate in Nigeria at 30.2 percent while the International Monetary Fund (IMF) (2020) reports that 33.3 percent Nigerian youths are without gainful employment.

Various models have been suggested for reducing youth unemployment in Nigeria. Nigeria's government should encourage the youths to take up training in vocational and technical education to reduce unemployment (Aworanti, 2013). This position was equally canvassed by Ukwa (2012); Obasi (2013), Usman (2012) believes that the viable solution to youths' unemployment in Nigeria is engaging the youths in vocational and technical education. The Federal Government of Nigeria in seemingly responses to various calls for the vocationalisation of Nigeria's secondary Education curriculum introduced a trade curriculum in 34 skills areas including Fishery. The rationale of the trade curriculum is to equip the recipients with technical and vocational skills to enable them to function as job creators and not seekers on graduation (Nigeria Educational Research and Development Council, 2013).

The introduction of the trade curriculum in Fishery to say the least is very commendable but has generated pertinent questions. Akinsanmi (2016), Afolayan (2017), Lawal (2017), and Okpako and Odioko (2016) questioned the rationale for introducing a trade curriculum without first recruiting and training teachers in the specialized area before implementation. Offia (2014) believes that the students may not be given the required skills to function on graduation because the teachers do not have what it takes to give instruction in Fishery. Ademu (2016) opines that utilizing nonspecialist science teachers to give instruction in trade

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curriculum in Fishery will not give desired results because the delivery will be done as a science rather than as trade. It is against this background that this study became germane.

The purpose of this study, therefore, is to assess the status of fishery and students' skills gaps expressed for competencies in fishery occupation in Public Secondary Schools in Delta State Nigeria

The following research questions guided the study

1. What is the status of Fishery in public secondary schools in Delta State
2. What are the students expressed knowledge gaps in for occupation in Fishery

The study was guided by the hypotheses below

Ho: there is no significant difference in the status of Fishery between rural and urban secondary schools in Delta State

Ho: there is no significant difference in the knowledge gaps expressed in Fishery by rural and urban Fishery students in public secondary schools in Delta State

2.0 STUDY AREA

Delta State is one of the 36 states in Nigeria. It is one of the oil-producing states in Nigeria and contributes 30 percent of Nigeria's oil production quota. Delta lies within geographical coordinates of longitude 5° 00 and 6° 45 E and latitude 5° 00 and 6° 50 N. It occupies a land area of 176,988 km2 with a population of 6,710,214 (National Population Census, 2006). The state plays host to numerous petroleum industries and a gas plant in Okapi Ndokwa East. Delta state is bounded at the east by Anambra state, north by Edo state, southeast by Bayelsa state, northwest by Ondo state and on the southern flank by the Bight of Benin. The people of Delta State are farmers, fishermen, artisans, and petty traders while some work as civil and public servants.

3.0 MATERIALS AND METHODS

The research design for this study is a descriptive survey with two research questions and two hypotheses.

The population of the study comprised 385 Fishery teachers in Delta State public secondary schools and 5694 Fishery students in senior secondary schools 1-3 in Delta State public secondary schools. The sampling procedure adopted for the study was multi-staged and samples obtained with Slovin's (1960) sample size formula were 196 Fishery teachers and 391 Fishery students in public secondary schools in Delta state. See Table 1.

The data collection instruments were 5 points Likert scale structured questionnaire validated by experts in Measurement and Evaluation in the Development of Counselling Psychology and Agricultural Education in the Department of Vocational Education Delta State University Abraka Delta Nigeria. The reliability of the data collection instrument was determined with test-retest, Pearson Product Moment Correlation coefficient, spearman Brown proficiency

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formula, and a correlation of 0.73 were obtained which was adjudged reliable enough for the study. The questionnaires were administered with the assistance of three research assistants each in a senatorial district. The data generated were analyzed with mean and standard deviation and hypotheses were tested with t-test statistics. A mean of 3.00-5.00 was accepted as affirmation while a mean of below 3.00 was taken as negation.

Table 1: Sampling procedures for the study

Senatorial district	No of L.G.A.	Proportion of L.G.A sampled	No. of school sampled	Fishery teachers sampled	Fishery students sampled
Delta north	9	6	29	134	69
Delta central	9	6	29	134	64
Delta south	7	4	28	123	63
Total	25	16	86	391	196

Table 2: Sex and age distribution of Fishery teachers in Delta state public secondary schools

Characteristics	Frequency	Percentage
Sex		
Male	140	62
Female	53	38
Age		
25-34	27	13.8
36-44	54	27.8
45-54	79	40.4
55-64	35	18

Sex distribution in Table 2 has shown that majority of the Fishery teachers in Delta state are males, 62 percent while female Fishery teachers make up 38 percent. In terms of age distribution, most of Fishery teachers in Delta state fall within the ages of 45 - 54 years old, 40.4 percent36-44 age bracket makeup 27 percent of the Fishery teachers, 25 - 34 years old is 13.8 percent of the teachers while 55-64 years old constitute 18 percent of the Fishery teachers in Delta state public secondary schools.

Table 3: Age distribution of Fishery students in public secondary schools in Delta state

Characteristics	Frequency	Percentage
Sex		
Male	210	55
Female	172	45
Age		

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12-14	66	18.3
15-17	190	49.4
18 and above	127	32.3

Students' age distribution table shows that most of the students offering Fishery are within the ages of 15-17 years, with a percentage of 49.4, 32.3 percent of the students are 18 years and above while 18.3 percent are within ages 12-14.

Research question 1: What is the status of Fishery in public secondary schools in Delta state?

Table 4: mean response of teachers on status of Fishery in public secondary schools in Delta state (n = 196)

S/N	Item	Mean	SD	Remarks
	What is the status of Fishery in your school?			
1.	Fishery is taught in my school as trade subject	2.67	1.267	Disagree
2.	Fishery is taught by agricultural science teachers	4.21	0.821	Agree
3.	My school offers Fishery as a subject in senior secondary certificate examinations	2.50	1.361	Disagree
	Grand mean	3.13		
	Grand SD		1.150	

The response of Fishery teachers on the status of fishery shows that the teachers disagreed that Fishery is taught as a trade subject with a mean response of 2.67±1.267. They also disagreed that Fishery is offered as a senior secondary school certificate examinations subject (mean = 2.50±1.361) however Fishery teachers agreed that Fishery is taught by agricultural science teachers and this attracted the mean of 4.21±0.821.

Research question 2: What are the skill gaps expressed by the students relevant to developing skills in Fishery occupation (n = 383)

Table 5: Mean responses of students on items on skill gaps in Fishery curriculum in public secondary schools in Delta state (n = 391)

S/N	Item	Mean	SD	Remarks

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	To what extent do you agree or disagree with the following as skill gaps in Fishery?			
1.	Operating a cast net	2.28	1.19	Disagree
2.	Operating a seine net	1.68	1.08	Disagree
3.	Construction and setting of fish traps	2.42	1.31	Disagree
4.	Setting of gill net	3.82	1.121	Agree
5.	Using of hook and line	2.45	1.51	Disagree
6.	Identification of culturable species	2.18	1.240	Disagree
7.	Earth pond construction	2.17	1.124	Disagree
8.	Making of fish cage	2.18	1.414	Disagree
9.	Construction of concrete pond	2.56	1.132	Disagree
10.	Construction of fish pen	2.21	1.143	Disagree
11.	Measurement of dissolved oxygen	1.73	1.614	Disagree
12.	Determination of “DO” with wrinklers kit	1.51	1.092	Disagree
13.	Measurement of “DO” using Hatch’s method	1.54	1.122	Disagree
14.	Measurement of water temperature	2.17	1.231	Disagree
15.	Measurement of pond turbidity	2.29	1.123	Disagree
16.	Determination of pond pH	2.43	1.136	Disagree
17.	Pond fertilizer application	2.12	1.304	Disagree

18.	Pond liming	2.18	1.316	Disagree
19.	Stocking the pond	2.50	1.498	Disagree
20.	Fish ratio formulation	2.21	1.120	Disagree
21.	Male brood stock identification	2.11	1.336	Disagree
22.	Identification of gravid female	2.10	1.332	Disagree
23.	Hypophysation	1.36	1.214	Disagree
24.	Sacrificing the male	1.70	1.260	Disagree
25.	Extracting the milt	1.80	1.335	Disagree
26.	Stripping the gravid	2.20	1.221	Disagree
27.	Artificial spawning	2.18	1.141	Disagree
28.	Feeding the hatchlings	2.49	1.344	Disagree
29.	Managing the hatching water	2.48	1.214	Disagree
30.	Identification of the shooters	1.324	1.152	Disagree
31.	Feeding of the yolk sac frys	1.86	1.240	Disagree
32.	Managing yolk sac frys pond water	2.20	1.124	Disagree
33.	Managing of the grow out frys	2.08	1.161	Disagree
34.	Feeding of the grow out frys	2.42	1.328	Disagree
35.	Grow out frys pond water management	2.07	1.141	Disagree
36.	Fish insect pest identification	2.48	1.281	Disagree
37.	Crustacean pest identification	2.21	1.228	Disagree
38.	Physical pond pest control	2.43	1.121	Disagree
39.	Chemical pond pest control	2.46	1.337	Disagree

40.	Biological pond pest control	2.54	1.362	Disagree
41.	Fungal disease of fish identification	2.22	1.225	Disagree
42.	Bacterial disease of fish identification	2.20	1.307	Disagree
43.	Viral diseases of fish identification	2.05	1.170	Disagree
44.	Carrying out partial cropping of pond	2.38	1.286	Disagree
45.	Carrying out total cropping of pond	2.61	1.321	Disagree
46.	Preservation of fish by salting	3.88	1.142	Agree
47.	Preservation of fish by freezing	3.21	1.482	Agree
48.	Preservation of fish by smoking	3.52	1.442	Agree
49.	Preservation of fish by fermentation	2.46	1.455	Disagree
50.	Fish preservation by drying	3.48	1.514	Disagree
	Grand mean	2.46		
	Grand SD		1.52	

The responses of students show that Fishery is taught as a science rather than as a trade subject as students exhibited a knowledge gap in Fishery skills with a grand mean of 2.46±1.52. The only skill area in Fishery that the students agreed they are knowledgeable is fish preservation by smoking, 3.52±1.44, drying 3.48±1.57, freezing 3.21±1.48 and salting 3.88±1.14.

Hypothesis 1

There is no significant difference in the status of Fishery as a subject in rural and urban secondary schools

Table 6: t-test statistical analysis on the status of Fishery between rural and urban secondary schools

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Mean±SD	N	df	t-cal	t-crit	P	Significance	Remark
Rural 3.12±1.45 Urban 3.30±1.132	194	192	4.02	6.21	0.05	Not significant	Accepted

The t-test statistical analysis of the status of Fishery as a trade subject in rural and urban public secondary schools in Delta state with n = 194, df 192, P> 0.05 level of significance yielded a t-test calculated value of 4.02 and a t-test critical value of 6.21. Thus accepting Ho. There is no significant difference in the status of Fishery between rural and urban public secondary schools in Delta state

Hypothesis 2

There is no significant difference in the students expressed Fishery knowledge and skill gaps between rural and urban public secondary schools in Delta state

Table 7: t-test statistics on the mean difference of the knowledge and skill gaps expressed by rural and urban public secondary schools students in Delta state

mean±SD	N	Df	t-cal	t-crit	p	Significance	Remark
Rural 2.15±1.14 Urban 2.32±1.38	391	389	3.52	5.36	0.05	Not significant	Accepted

T-test statistical analysis on the mean responses of students on the Fishery knowledge gaps expressed at n=391, df, 389, p>0.05 t calculated value is 3.52 while t critical value is 5.36, thus accepting Ho. There is no significant difference in the mean responses of students who expressed Fishery knowledge and skill gaps between rural and urban public secondary schools in Delta state

4.0 DISCUSSION

Nigeria's educational system in secondary school has been hitherto very cognitive with most emphasis on paper qualification and rote learning. The curriculum restructuring that gave birth to the trade curriculum is a mark deviation from the old and places emphasis on manipulative and entrepreneurship skills for students' empowerment, job, and wealth creation.

However, the result of this study has shown that not much has changed in terms of curriculum delivery. Fishery skill is taught as science in the secondary schools in Delta state and Fishery teachers are the same as Agricultural science teachers who are not trained in the practical skills of Fishery for the curriculum implementation (see Table 4). Abimbola and Akintuoku (2019) observed a similar situation in Ogun State secondary schools. Also, Osagwu and Odum (2018), Abduwaheed (2017), and Onyia (2016) had similar accounts on the status of Fishery in Imo, Gombe, and Ebonyi state public secondary schools.

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The students remain largely untrained and have no Fishery skills as shown by their responses in Table 5. They have no knowledge of Fishery skills to enable them to take to Fishery occupation on graduation. From the list of 51 items on fisheries knowledge and skills, the student only agreed to have knowledge and skill on the preservation of fish (smoking, salting, freezing, and drying) they have no knowledge of the fermentation method of preservation, which this show is that the students must have gotten preservation knowledge from their parents.

Hypothesis 1 in the study showed that Fishery is taught as a science in both rural and urban public secondary schools and not as a trade subject. Hypothesis 2 revealed that both rural and urban students lack skills and knowledge in Fishery because they are taught by teachers who lack the competencies to give instruction in the Fishery trade.

5.0 CONCLUSION

The Trade curriculum is intended to rescue Nigerian youths from gross unemployment, hunger, and poverty but the implementation of the curriculum seems not to be in consonance with set aims and objectives. It is pertinent that the curriculum is adequately situated to achieve the set goals of job creation, poverty, and hunger eradication in Nigeria.

6.0 RECOMMENDATIONS

Consequent to the results of this study, it is recommended that:

1. Fishery should be taught as a trade subject, not as a science
2. Specialised teachers should be recruited or the Agricultural science teachers be sent on in-service courses to equip them with Fishery expertise
3. Students should be exposed to practical skills in Fishery to equip them well enough to take up Fishery occupation on graduation.

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