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INFLUENCE OF ENVIRONMENTAL ADULT EDUCATION PROGRAMMES ON RESTORATION OF AQUATIC RESOURCES AMONG THE WAKIRIKA PEOPLE OF RIVERS STATE

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ABSTRACT

This study examined influence of environmental adult education programmes on the restoration of aquatic resources among the Wakirika people of rivers state. four research objectives, four research questions, and four null hypotheses were used for the study. descriptive survey research design was adopted for the study. the population for the study comprised 168 community inhabitants, including 58 female and 110 male beneficiaries in the registered adult education centres in the study area. due to the relatively small and manageable population size, a census approach was used, eliminating the need for sampling and ensuring that the entire population was represented in the study. The instrument for data collection was a structured questionnaire titled “Influence of Environmental Adult Education Programmes on Restoration of Aquatic Resources Questionnaire”. the face and content validity of the instrument was determined by two experts in the field of environmental adult education. the reliability of the instrument was determined through a pilot study while Cronbach Alpha method was used to establish the reliability coefficient (r) value 0.69,. the responses from the four research questions were analysed with mean and standard deviation statistic. The findings from the study revealed that environmental literacy, conservation education, agricultural extension education, and waste management education programmes influence the restoration of aquatic resources among the Wakirika people of Rivers State to a high extent. The study recommended among others that Rivers State Government through Agency for Adult and Non-Formal Education should integrate environmental literacy education into existing adult education programmes in Rivers State to educate more community inhabitants on the needs for environmental activities that sustains aquatic lives.

KEYWORDS: Environmental Adult Education, Programmes, Restoration, Aquatic Resources.

INTRODUCTION

Natural environment is the primary source of livelihood, with communities relying on aquatic and forest resources for their sustenance. The sustainability of the environment and its resources has become a pressing concern globally as human activities continue to degrade the environment at an alarming rate (Kumar & Kumar, 2018). Nigeria's environment is faced with numerous challenges, including deforestation, erosion, flooding, desertification, climate change, and depletion of natural resources, which threaten the livelihoods of people, particularly in rural areas (Adeyemo & Oyedepo, 2019).

Aquatic resources refer to the living and non-living components of freshwater and marine ecosystems that provide benefits to humans and support biodiversity. These resources include; aquatic plants or macrophytes, such as seaweeds, sea grasses, and aquatic vegetation, that provide habitat, food, and shelter for aquatic animals, freshwater and marine water resources that support human consumption, agriculture, industry, and recreation, coastal and inland wetlands, such as mangroves, marshes, and swamps, that provide habitat for aquatic animals, filter water, and support shoreline stabilisation and aquatic habitats such as coral reefs, estuaries, rivers, lakes, and other aquatic ecosystems that support biodiversity and provide ecosystem services (Adesina, & Ojo, 2019). Aquatic resources play a vital role in supporting the livelihoods of people living in riverine communities, particularly in Wikirika communities in Rivers State, where they provide a source of food, income, and transportation. According to Kumar and Kumar (2018), aquatic resources are essential for human well-being, as they contribute to food security, economic growth, and sustainable development.

Okirika is surrounded by river, creeks, ponds and swamps which are endowed with different kinds of aquatic animal and plant species. The aquatic environments have been greatly disturbed by human activities for years, increasingly resulting in deterioration of aquatic ecosystem and, ultimately, the destruction of aquatic lives. This is caused by unsustainable practices carried out within, and outside the aquatic environment. These practices, put pressure on the environment and its resources thereby causing species to disappear in an alarming rate (Korinaki, 2021).

Furthermore, Adeyemo and Oyedepo (2019) noted that aquatic resources are also crucial for maintaining biodiversity, regulating water cycles, and supporting recreational activities,

highlighting the need for sustainable management and conservation practices to ensure the long-term viability of these resources. Undoubtedly, Bakari, Mustapha, and Garba (2016) acknowledged that aquatic resources are essential for human well-being, as they provide food and nutrition, income and livelihoods, recreation and tourism opportunities, ecosystem services, such as water filtration and shoreline stabilisation, biodiversity and habitat for aquatic animals. However, aquatic resources are facing numerous threats, including overfishing, pollution, habitat destruction, and climate change, among other human activities which can impact their sustainability and availability for future generations. The success of environmental conservation efforts depends on changing the attitudes, values, perceptions, habits, and inclinations of human beings. Environmental education is a prerequisite for promoting environmental quality, as it raises public awareness on environmental issues and encourages eco-friendly behaviour (Ezechinnah, 2019). Therefore, environmental adult education programmes have been identified as being essential in promoting attitudinal change and environmental sustainability for the restoration of aquatic resources in riverine communities.

According to Hungerford and Volk (2018), environmental adult education programmes are designed to equip individuals with the knowledge, skills, and attitudes necessary to promote environmental sustainability. These programmes can play a critical role in addressing environmental challenges, such as the degradation of aquatic resources, by empowering individuals and communities to take action (Kudryavtsev, Krasny, & Stedman, 2020). These environmental adult education programmes include; environmental literacy, conservation education, agricultural extension education, and waste management education programmes. Environmental literacy is a crucial aspect of promoting sustainability and environmental conservation. Undoubtedly, Eheazu (2016) acknowledged that environmental literacy refers to the ability to understand and analyse environmental issues, as well as to make informed decisions about the environment. The above assertion imply that environmental literacy is essential for individuals to navigate the complexities of environmental issues and to take action to mitigate their impact on the environment. Adeyemo, Oyebisi, and Oke (2019) acknowledged that environmental literacy empowers individuals to make informed decisions and take action to protect the environment.

Conservation education plays a vital role in promoting environmental stewardship and sustainability. According to Jacobson (2019), conservation education can foster a sense of responsibility and ownership among individuals, leading to increased participation in conservation efforts. Similarly, Monroe (2020) emphasised the importance of conservation

education in developing environmental literacy and promoting pro-environmental behaviours, ultimately contributing to the conservation of natural resources. On the other hand, agricultural extension education is a process of educating farmers, agricultural workers, and rural communities about improved agricultural practices, technologies, and innovations to enhance their productivity, income, and quality of life. According to Lola, and Akintoye (2020), the goal of agricultural extension education is to equip farmers and rural communities with the knowledge, skills, and attitudes necessary to improve their livelihoods and contribute to sustainable agricultural development.

Waste Management Education Programme is an educational initiative that aims to educate individuals, communities, and organizations about the importance of proper waste management and the benefits of reducing, reusing, and recycling waste. According to Amadu and Mohammed (2017), waste management education Programme deals with issues relating to reduction of waste generation, increase recycling rates, promotion of sustainable waste management practices, improvement on waste management infrastructure and services, and enhancement of community awareness and participation in waste management. From the forgoing, it is believed that by environmental adult education programmes can help to mitigate the negative impacts of human activities on aquatic resources. It is based on this background that this study was designed to examine influence of environmental adult education programmes on restoration of aquatic resources among the Wakirika people of Rivers State.

Statement of the Problem

Aquatic resources worldwide face severe degradation due to human activities, threatening biodiversity, ecosystem services, and local livelihoods In Okirika Local Government Area of Rivers State, fish and other wetland species are being forced into extinction due to the destruction of the natural habitats and aquatic lives. Many fisher folk no longer practice the conventional method of fishing with canoes, nets and hooks but now make use of toxic plants and chemicals for fishing. These unhealthy practices destroy the fish stock, fingerlings, eggs, plankton and other aquatic species. leads to disruption of egg-laying, breeding and hatching thereby reducing the population of lives in the water. Sometimes, these fisher folk make use of drift nets which do not spare the smallest form of life in the area thereby depleting these aquatic animals. Pollution from oil exploration and exploitation, unsustainable agricultural practices and dredging activities also contribute to the death and extinction of animal species in the water thereby altering the aquatic ecosystem. Despite growing concerns, restoration

efforts are hindered by inadequate community awareness, knowledge gaps, and unsustainable practices

However, This critical situation underscores the need for targeted interventions, particularly environmental adult education programmes such as environmental literacy, conservation education, agricultural extension education, and waste management education programmes. But could these identified programmes influence the restoration of aquatic resources, management, conserve biodiversity, and ensure ecosystem resilience?, providing answer to these questions, warranted a study of this nature to fill the gap in knowledge.

Purpose of the Study

The purpose of this study was to examine influence of environmental adult education on restoration of aquatic resources among the Wakirika people of Rivers State. Specifically, the objectives of this study were to:

1. Find out the extent to which environmental literacy programme influence restoration of aquatic resources among the Wakirika people of Rivers State.
2. Examine the extent to which conservation education programme influence restoration of aquatic resources among the Wakirika people of Rivers State.
3. Investigate the extent to which agricultural extension education programme influence restoration of aquatic resources among the Wakirika people of Rivers State.
4. Investigate the extent to which waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State.

Research Questions

The following research questions were used to guide the study

1. To what extent does environmental literacy education programme influence restoration of aquatic resources among the Wakirika people of Rivers State?
2. To what extent does conservation education programme influence restoration of aquatic resources among the Wakirika people of Rivers State?
3. To what extent does agricultural extension education programme influence restoration of aquatic resources among the Wakirika people of Rivers State?
4. To what extent does waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State?

Hypotheses

The following null hypotheses were utilised to guide the study

1. There is no significant difference in the mean responses of male and female beneficiaries in adult education centers on the extent that environmental literacy education programme influence restoration of aquatic resources among the Wakirika people of Rivers State.
2. There is no significant difference in the mean responses of male and female beneficiaries in adult education centers on the extent that conservation education programme influence restoration of aquatic resources among the Wakirika people of Rivers State.
3. There is no significant difference in the mean responses of male and female beneficiaries in adult education centers on the extent that agricultural extension education programme influence restoration of aquatic resources among the Wakirika people of Rivers State.
4. There is no significant difference in the mean responses of male and female beneficiaries in adult education centers on the extent that waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State.

METHODOLOGY

This study conducted among the Wakirikki people in Okirika Local Government Area of Rivers State, employed a descriptive survey research design. The study's population comprised 168 community inhabitants, including 58 female and 110 male beneficiaries in the registered adult education centres in the study area. Due to the relatively small and manageable population size, a census approach was used, eliminating the need for sampling and ensuring that the entire population was represented in the study. The instrument for data collection was a structured questionnaire titled “Influence of Environmental Adult Education Programmes on Restoration of Aquatic Resources Questionnaire”. The questionnaire was structured on four (4)-point rating scale of Very High Extent-VHE (4), High Extent–HE (3), Low Extent–LE (2), Very Low Extent- VLE. (1). The reliability of the instrument was done for each cluster of items in the questionnaire through a pilot study of 30 respondents who are beneficiaries in the registered adult education centers in Eleme Local Government Area outside the study population. The instrument was administered once on the respondents, after which the data was collected and analysed with Cronbatch Alpha method. The overall reliability coefficient (r) value of 0.69 was obtained for the various clusters of the instrument. Out of 168 copies of the questionnaire administered, 9 copies were not retrieved, while 159 copies representing 94.5% of the questionnaire were retrieved. Out of the retrieved copies, 7 copies from male beneficiaries were wrongly filled and discarded, while only 152 copies

which include 55 copies from female and 97 copies from male beneficiaries were correctly filled and used for analysis. The data collected from the research questions were analysed using mean and standard deviation statistics. Since the items were rated on four (4) point rating scale. Thus, the decision on each of the items were guided by the following rules; 1-1.49 =Very Low Extent, 1.5-2.49= Low Extent, 2.5-3.49 = High Extent, 3.5-4.00= Very High Extent. The null hypotheses were tested with the use of t-test statistic method at 0.05 level of significance and were accepted because the p-values were high than 0.05 significant level and would have been rejected if otherwise.

RESULTS

Research Question 1: To what extent does environmental literacy education programme influence restoration of aquatic resources among the Wakirika people of Rivers State?

Table 1: Mean Responses on the Extent that Environmental Literacy Education Programme Influence Restoration of Aquatic Resources among the Wakirika People of Rivers State.

S/N	Items Statement	Female Beneficiaries n=(55) Mean	SD	Decision	Male Beneficiaries n=(97) Mean	SD	Decision
1.	Aquatic ecosystem education has increased my awareness on sustainable use of aquatic food chains, habitats, and ecosystem services that promote conservation.	2.86	0.90	HE	2.79	0.81	HE
2	Environmental literacy has improved my knowledge on sustainable fishing Practices that are eco-friendly to reduce by catch, protects habitats, and conserves fish populations.	2.77	0.82	HE	2.75	0.88	HE
3	Aquatic Biodiversity Conservation has enhanced my knowledge on how to protect endangered species and maintains ecosystem balance.	2.73	0.80	HE	2.80	0.89	HE
4	Environmental policy education has made me develop critical thinking skill to encourage compliance among community inhabitants	2.49	1.09	HE	2.85	0.87	HE
5	Environmental Indigenous knowledge sharing has equipped me with knowledge	2.64	0.86	HE	2.37	1.00	LE

	and skills to Identify pollution sources, and informs remediation efforts.						
	Grand Mean	**2.70**	**0.89**	HE	**2.71**	**0.89**	HE

Table 1 above shows the mean responses of the respondents on the extent environmental literacy education programme influence restoration of aquatic resources among the Wakirika people of Rivers State. Item 1 has mean scores of 2.86 and 2.79, standard deviation of 0.90 and 0.81. Item 2 has mean scores of 2.77 and 2.75, standard deviation of 0.82 and 0.88. Item 3 has mean scores of 2.73 and 2.80, standard deviation of 0.80 and 0.89. Item 4 has mean scores of 2.49 and 2.85, standard deviation of 1.09 and 0.87. Item 5 has mean scores of 2.64 and 2.37, standard deviation of 0.86 and 1.00. The grand mean of 2.70 and 2.71 recorded was recorded. This indicates that majority of the respondents were of the opinion that environmental literacy education programme influence restoration of aquatic resources among the Wakirika people of Rivers State to a high extent.

Research Question 2: To what extent does conservation education programme influence restoration of aquatic resources among the Wakirika people of Rivers State?

Table 2: Mean Responses on the Extent does Conservation Education Programme Influence Restoration of Aquatic Resources among the Wakirika people of Rivers State

S/N	Statement	Female Beneficiaries n= (55)			Male Beneficiaries (97)		
		$\overline{X}$	SD	Rmks	$\overline{X}$	SD	Rmks
6	Conservation education programme has increased my awareness on conservation needs by discouraging excessive hunt for aquatic resources.	2.65	1.27	HE	2.60	1.22	HE
7	Conservation education has made me to know the dangers of using smaller mesh net in fishing activities to reduce pollution and habitat destruction.	2.67	1.27	HE	2.65	1.19	HE
8	Acquisition of skill through conservation education programme has improved my knowledge on sustainable fishing practices	2.61	1.22	HE	2.64	1.19	HE
9	Conservation education programme has made me to know that use of chemicals for fishing pollute the river and makes it unfit for aquatic lives to live in.	2.73	1.24	HE	2.58	0.52	HE
10	Conservation education programme has improved my understanding that reduction in aquatic resources can lead to loss of livelihood.	2.70	1.20	HE	2.71	1.22	HE

11	conservation education programme has made me understand that the use of chemical like gammalin for fishing deplete aquatic resources	2.60	1.29	HE	2.50	0.52	HE
12	Conservation education programme enable fishermen to stop fishing with poisonous plants.	2.68	1.25	HE	2.70	1.22	HE
13	Conservation education programme has made me aware that use of dynamite for fishing reduces destroys and reduces aquatic lives	2.63	1.22	HE	2.60	1.23	HE
	Grand Mean	**2.66**	**1.25**	HE	**2.62**	**1.03**	HE

Table 2 above shows the mean responses of the respondents on the extent conservation education programme influence restoration of aquatic resources among the Wakirika people of Rivers State. Item 6 recorded mean scores of 2.65 and 2.60, with standard deviation of 1.27 and 1.22. Item 7 has mean scores of 2.67 and 2.65 with standard deviations of 1.27 and 1.19. Item 8 recorded mean scores of 2.61 and 2.64 with standard deviation of 1.22 and 1.19. Item 9 has mean scores of 2.73 and 2.62, with standard deviations of 1.24 and 1.23. Item 10 recorded mean scores of 2.70 and 2.71 with standard deviations of 1.20 and 1.22. Item 11 has mean scores of 2.68 and 2.70 with standard deviation 1.29 and 1.21, while item 12 recorded mean scores of 2.60 and 2.70 with standard deviations of 1.25 and 1.22. Item 13 has mean scores of 2.63 and 2.60 with standard deviations of 1.22 and 1.23 respectively. Responses in this research question 2 recorded a grand mean of 2.66 and 2.62 for both group of respondents. The results pointed out that the respondents were in agreement that conservation education programme influence restoration of aquatic resources among the Wakirika people of Rivers State to a high extent.

Research Question 3:. To what extent does agricultural extension education programme influence restoration of aquatic resources among the Wakirika people of Rivers State?

Table 3: Mean Responses on the Extent Agricultural Extension Education Programme influence restoration of aquatic resources among the Wakirika people of Rivers State

S/N	Statements	Female Beneficiaries n= (55)			Male Beneficiaries s n= (97)		
		$\overline{X}$	SD	Rmks	$\overline{X}$	SD	Rmks
14.	The knowledge of sustainable fishing practices has made me to understand the safe method of catch-and-release fishing to avoiding overfishing.	2.70	1.25	HE	2.65	1.20	HE
15.	Participation in agricultural education programme has exposed me to the knowledge of integrated pest management practices that reduces the use of chemical pesticides that can contaminate aquatic	2.62	1.21	HE	2.60	1.22	HE

	resources.						
16.	Soil conservation and erosion control education has improved my knowledge on terracing and mulching, to reduce soil erosion and sedimentation in aquatic resources.	2.77	1.20	HE	2.69	1.17	HE
17.	Fish farming and aquaculture education has improved my knowledge on the best farming practices that reduce the pressure on wild aquatic resources.	2.78	1.20	HE	2.69	1.20	HE
18.	Water quality monitoring education has improved my knowledge on how to monitor water quality and identify sources of pollution to ensure aquatic restoration	2.85	1.11	HE	2.60	1.23	HE
19	Aquatic habitat restoration education has exposed me to the importance of restoring aquatic habitats, such as wetlands and mangroves.	2.75	1.16	HE	2.68	1.21	HE
	Grand Mean	**2.76**	**1.18**	HE	**2.65**	**1.20**	HE

Table 3 above shows the mean responses of the respondents on the extent agricultural extension education programme influence restoration of aquatic resources among the Wakirika people of Rivers State. From the table, all mean responses are higher than the decision mean of 2.50 which implies that all items are rated high. The small values of standard deviations are also indicative that responses are continuous. The grand mean responses for facilitators and female learners were respectively 2.76 and 2.65, both higher than the decision mean. It therefore implies that both groups of respondents agreed that agricultural extension education programme influence restoration of aquatic resources among the Wakirika people of Rivers State to a high extent.

Research Question 4: To what extent does waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State?

Table 4: Mean Responses on the Extent Waste Management Education Programme Influence Restoration of Aquatic Resources among the Wakirika People of Rivers State

S/N	Statements	Female Beneficiaries n= (55)			Male Beneficiaries n= (97)		
		$\overline{X}$	SD	Rmks	$\overline{X}$	SD	Rmks
14.	Environmental behavioral change education has improved my behaviour in reducing waste, reusing materials, and recycling, to promote the restoration of aquatic resources.	2.52	0.55	HE	2.75	0.64	HE
15.	Waste management education has improved my knowledge on safe handling and disposal of hazardous waste, such as batteries, electronics, and chemicals, to prevent them from entering aquatic	2.63	0.60	HE	2.68	0.63	HE

	ecosystems.						
16.	Teaching about the impacts of chemical pollution on aquatic resources has improved my knowledge on the use of environmentally friendly cleaning products and pesticides.	2.77	0.50	HE	2.59	0.54	HE
17.	Education on sewage and wastewater management has improved my skills on the use of septic systems and wastewater treatment plants.	2.78	0.66	HE	2.60	0.55	HE
18.	Recycling and composting education has improved my knowledge on reducing the amount of waste that ends up in landfills and aquatic ecosystems.	2.85	0.80	HE	2.68	0.53	HE
19	Waste management education on microplastic pollution has raised my awareness on the use of microbead-free personal care products.	2.75	0.58	HE	2.78	0.64	HE
	Grand Mean	**2.71**	**0.62**	HE	**2.68**	**0.50**	HE

Table 4 above shows the mean responses of the respondents on the extent waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State. From the table, all mean responses are higher than the decision mean of 2.50 which implies that all items are rated high. The small values of standard deviations are also indicative that responses are continuous. The grand mean responses for the respondents were 2.71 and 2.68, both higher than the decision mean of 2.50. It therefore implies that both groups of respondents agreed that waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State to a high extent.

Test of Hypotheses

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

Hypothesis 1. There is no significant difference in the mean responses of male and female beneficiaries in adult education centers on the extent that environmental literacy education programme influence restoration of aquatic resources among the Wakirika people of Rivers State.

Table 6: t-test Statistic on Difference in the Mean Ratings of Male and Female Beneficiaries in Adult Education Centers on the Extent that Environmental Literacy Education Programme Influence Restoration of Aquatic Resources among the Wakirika People of Rivers State.

.Respondents	N	$\overline{X}$	SD	df	r-cal	p-value	s/level	Decision
Female beneficiaries	55	2.70	0.89	150	0.66	0.74	0.05	Significant
Male beneficiaries	97	2.71	0.89					

Table 6 above, shows that P-value of 0.74 is greater than 0.05 level of significance at 150 degree of freedom which indicated that there was no significant difference in the mean responses of male and female beneficiaries in the registered adult education centers on the extent that environmental literacy education programme influenced restoration of aquatic resources among the Wakirika people of Rivers State. This therefore means that the null hypothesis was accepted.

Hypothesis 2. There is no significant difference in the mean responses of male and female beneficiaries in adult education centers on the extent that conservation education programme influencd restoration of aquatic resources among the Wakirika people of Rivers State.

Table 7: t – test Statistic on Difference in the Mean Ratings of of Male and Female Beneficiaries in Adult Education Centers on the Extent that Conservation Education Programme Influencd Restoration of Aquatic Resources among the Wakirika People of Rivers State.

Respondents	N	$\overline{X}$	SD	Df	r-cal	P-value		s/level	Decision
Female Beneficiaries	55	**2.66**	1.25	150	0.64	0.96		0.05	Significant
Male Beneficiaries	97	**2.62**	1.03						

Table 7 above, shows that P–value of 0.96 is greater than 0.05 level of significance at 150 degree of freedom indicating that there was no significant difference in the mean rating of male and female beneficiaries in adult education centers on the extent that conservation education programme influenced restoration of aquatic resources among the Wakirika people of Rivers State.. This therefore means that the null hypothesis is accepted

Hypothesis 3. There is no significant difference in the mean responses of male and female beneficiaries in adult education centers on the extent that agricultural extension education programme influenced restoration of aquatic resources among the Wakirika people of Rivers State.

Table 8: t –test Statistic on Difference in the Mean Ratings of Male and Female Beneficiaries in Adult Education Centers on the Extent that Agricultural Extension Education Programme Influence Restoration of Aquatic Resources among the Wakirika people of Rivers State.

.Respondents	N	$\overline{X}$	SD	Df	r-cal	p-value	s/level	Decision
Female Beneficiaries	55	**2.76**	**1.18**	150	0.56	0.87	0.05	Significant
Male beneficiaries	97	2.65	1.20					

Table 8 above, shows that p – value of 0.87 is greater than 0.05 level of significance at 150 degree of freedom indicating that there was no significant difference in the mean rating of male and female beneficiaries in adult education centers on the extent that agricultural extension education programme influence restoration of aquatic resources among the Wakirika people of Rivers State. This therefore means that the null hypothesis is accepted.

Hypothesis 4. There is no significant difference in the mean responses of male and female beneficiaries in adult education centers on the extent that waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State.

Table 10: t – test Statistic on Difference in the Mean Ratings of Male and Female Beneficiaries in adult education centers on the Extent that Waste Management Education Programme Influence Restoration of Aquatic Resources among the Wakirika People of Rivers State.

Respondents	N	$\overline{X}$	SD	Df	r-cal	p-value	s/level	Decision
Female Beneficiaries	55	2.71	0.62	150	0.47	0.68	0.05	Significant
Male Beneficiaries	97	2.68	0.50					

Table 10 above, shows that P-value of 0.68 is greater than 0.05 level of significance at 150 degree of freedom indicating that there was no significant difference in the mean rating of male and female beneficiaries in adult education centers on the extent that waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State. . This therefore means that the null hypothesis was accepted.

Discussion of Findings

The finding in research question 1 revealed that majority of the respondents were of the opinion that environmental literacy education programme influence restoration of aquatic resources among the Wakirika people of Rivers State to a high extent. This was evidenced in the grand mean of 2.70 and 2. 71 for items 1, 2, 3, 4 and 5. Indicating that environmental literacy education programme increased beneficiaries awareness on sustainable use of aquatic food chains, habitats, and ecosystem services that promote conservation, improved beneficiaries knowledge on sustainable fishing practices that are eco-friendly to reduce bycatch, protects habitats, and conserves fish populations, enhanced beneficiaries knowledge on how to protect endangered species and maintains ecosystem balance, made beneficiaries develop critical thinking skill to encourage compliance among community inhabitants, and equipped them with knowledge and skills to identify pollution sources, and informs remediation efforts. This finding was affirmed by the result of the corresponding hypothesis one which revealed that there was no significant difference in the mean responses of male and female beneficiaries on the extent that environmental literacy education programme influence restoration of aquatic resources among the Wakirika people of Rivers State. The finding in this research question is in line with the finding of Oyinlola, and Akintoye (2020) that acquisition of environment al literacy increases beneficiaries' awareness and knowledge on sustainable fishing practices, conservation of endangered species, and protection of aquatic habitats. In another related study, Adesina, and Ojo (2019). Also find that environmental literacy programme enhanced beneficiaries' critical thinking skills, encouraged compliance with environmental regulations, and promoted behavioural change towards sustainable use of aquatic resources. Thus, environmental literacy is required by every member of the society for the proper use of our natural resources without contaminating the environment.

Research question 2, indicated that the respondents were in agreement that conservation education programme influence restoration of aquatic resources among the Wakirika people of Rivers State to a high extent as verified in the high mean responses in items 6, 7, 8, 9, 10, 11-13 which showed that conservation education programme increased beneficiaries awareness on conservation needs by discouraging excessive hunt for aquatic resources, made beneficiaries to know the dangers of using smaller mesh net in fishing activities to reduce pollution and habitat destruction, improved their knowledge on sustainable fishing practices, made beneficiaries to know that use of chemicals for fishing pollute the river and makes it unfit for aquatic lives to live in, improved my understanding that reduction in aquatic

resources can lead to loss of livelihood, made beneficiaries understand that the use of chemical like gammalin for fishing deplete aquatic resources, enable fishermen to stop fishing with poisonous plants, and made beneficiaries aware that use of dynamite for fishing destroys and reduces aquatic lives. This finding was further confirmed by the corresponding hypothesis 2 which showed that there was no significant difference in the mean responses of male and female beneficiaries in adult education centers on the extent that conservation education programme influencd restoration of aquatic resources among the Wakirika people of Rivers State. This finding is related to the finding of Okeke, and Eze (2020).that conservation education programme increases beneficiaries' awareness of conservation needs, knowledge of sustainable fishing practices, and understanding of the dangers of using smaller mesh nets and chemicals in fishing activities. Similarly, Akinwumi, and Oladele (2019) also find that conservation education increased beneficiaries' awareness of the importance of conservation, improved their knowledge of sustainable fishing practices, and encouraged them to adopt more environmentally friendly fishing methods.

The findings from research question 3 indicated that both the male and female respondents shared a common view that agricultural extension education programme influence restoration of aquatic resources among the Wakirika people of Rivers State to a high extent, hence the grand mean of 2.76 and 2.75 recorded revealed that the knowledge of sustainable fishing practices has made beneficiaries to understand the safe method of catch-and-release fishing to avoiding overfishing, Participation in agricultural education programme has exposed beneficiaries to the knowledge of integrated pest management practices that reduces the use of chemical pesticides that can contaminate aquatic resources, soil conservation and erosion control education has improved beneficiaries knowledge on terracing and mulching, to reduce soil erosion and sedimentation in aquatic resources, fish farming and aquaculture education has improved beneficiaries knowledge on the best farming practices that reduce the pressure on wild aquatic resources, water quality monitoring education has improved beneficiaries knowledge on how to monitor water quality and identify sources of pollution to ensure aquatic restoration and aquatic habitat restoration education has exposed beneficiaries to the importance of restoring aquatic habitats, such as wetlands and mangroves. The corresponding hypothesis 3 affirmed that there was no no significant difference in the mean rating of male and female beneficiaries in adult education centers on the extent that agricultural extension education programme influence restoration of aquatic resources among the Wakirika people of Rivers State. This finding corroborate with the finding of Ekanem, and Udo (2018) that agricultural extension programme improves beneficiaries' knowledge on

integrated pest management, soil conservation, and water quality monitoring. The finding also agrees with the discovery of Nwokoro and Chima (2017) that lack of knowledge of environmental degradation on the part of the rural agriculturalist increases chances of unsustainable and excessive use of agro-chemicals for better yield of agricultural produce. Hence, it should be the priority of relevant authorities to ensure that agricultural extension programmes reaches agriculturalists in the rural areas.

The finding in research question 4 indicated that the respondents agreed that waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State to a high extent. This is proven in the high grand mean of 2. 71 and 2.68 which revealed that waste management education programme improved beneficiaries behaviour in reducing waste, reusing materials, and recycling, to promote the restoration of aquatic resources, improved beneficiaries knowledge on safe handling and disposal of hazardous waste, such as batteries, electronics, and chemicals, to prevent them from entering aquatic ecosystems, improved beneficiaries knowledge on the use of environmentally friendly cleaning products and pesticides, improved beneficiaries skills on the use of septic systems and wastewater treatment plants, improved beneficiaries knowledge on reducing the amount of waste that ends up in landfills and aquatic ecosystems, and raised beneficiaries awareness on the use of microbead-free personal care products. The corresponding hypothesis 4 confirmed that there was no significant difference in the mean rating of male and female beneficiaries in adult education centers on the extent that waste management education programme influence restoration of aquatic resources among the Wakirika people of Rivers State. This finding agrees with the finding of Amadu and Mohammed (2017) that waste management education improves beneficiaries' knowledge on safe handling and disposal of hazardous waste, use of environmentally friendly cleaning products and pesticides, and use of septic systems and wastewater treatment plants. Similarly, Tanko, and Yakubu (2018), that waste management education improves beneficiaries knowledge on reducing waste, reusing materials, and recycling, as well as reducing the amount of waste that ends up in landfills and aquatic ecosystems. The finding of the study indicated that the implementation of waste management education programmes is crucial for the long-term conservation and sustainability of aquatic resources and ecosystems. Furthermore, incorporating environmental education into adult learning frameworks is vital for mitigating not only the depletion of aquatic resources but also other forms of environmental pollution and degradation.

CONCLUSION

Based on the findings of the study, it was concluded that environmental adult education programmes such as environmental literacy, conservation education, agricultural extension education, and waste management education programmes have significant influence on restoring aquatic resources among the Wakirika people of Rivers State to a high extent. By providing the community with the necessary knowledge, skills, and attitudes, these programmes enable them to adopt environmentally friendly practices, reduce pollution, and conserve aquatic resources. The study's findings emphasised the crucial role of environmental adult education in promoting sustainability and restoring damaged ecosystems. The success of these programmes has important implications for policymakers and practitioners. By expanding these programs, communities can be empowered to protect and conserve their aquatic resources, contributing to a more sustainable future.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Rivers State Government through Agency for Adult and Non-Formal Education should integrate environmental literacy education into existing adult education programmes in Rivers State to educate more community inhabitants on the needs for environmental activities that sustains aquatic lives.
2. Rivers State Government, Ministry of Environment, and Non-Governmental Organisations (NGOs) should establish conservation education programmes specifically targeting fishing communities in Rivers State to equip fishing communities with the knowledge and skills necessary to adopt sustainable fishing practices
3. Ministry of Agriculture and Agricultural Extension Agents should partner with communities in strengthening agricultural extension services to enable farmers to adopt sustainable agricultural practices, reducing the impact of agricultural activities on aquatic resources.
4. Ministry of Environment, and Local Government Councils should synergise with community stakeholders in Implementing waste management education programmes to raise awareness among community members on the importance of proper waste disposal and encourage them to adopt environmentally friendly waste management practices that does not affect aquatic lives.

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