

INDIGENOUS EDUCATION AND ENVIRONMENTAL SUSTAINABILITY IN SOUTHERN CROSS RIVER STATE, NIGERIA

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Abstract

This study investigated the indigenous agricultural education knowledge and environmental sustainability in Southern Cross River State, Nigeria. Two research questions were raised and corresponding two hypotheses were formulated to guide and test the study. The instrument for data collection was a structured questionnaire. The research was carried out in three local government areas in the southern senatorial district of Cross River State. The independent variables for the study include: indigenous education on agricultural practices, while the dependent variable is environmental sustainability. Using stratified random sampling technique, a sample of six hundred and twenty-three (623) respondent were used for the study. Analyses were done using independent t-test, and Pearson Product Moment Correlation. The result of the analysis shows that there is significant relationship between indigenous agricultural knowledge and environmental sustainability. It was therefore recommended that Environmental education should be introduced in all level of our educational systems and also in the communities across Nigeria.

Keywords: indigenous education, environmental sustainability, agricultural practices

Introduction

Indigenous education has a lot to do with local environmental sustainability. The philosophy of native ways and means of sustaining environment and its natural resources were derived from the indigenous knowledge of environmental conservation, preservation and protection. Indigenous education refers to the native, indigenous knowledge that existed among fore-parents before the advent of the Western and Islamic forms of education in Africa. Indigenous education is also known as folk education, traditional knowledge, wisdom and traditional science. This education is passed from one generation to another in the Southern Cross River State, Nigeria. The education is usually taught by word of mouth, action and activities using the language of the people (common language), traditional rituals, technology and skills acquisition. The learners of indigenous education acquire the knowledge through indigenous pedagogy. This has been the basis for agricultural food production practices.

Gough (2006) opines that much of the biological diversities in the world, are in the custody of the farmers who follow age-long agricultural and land use practices. Developing countries such as Nigeria are conscious of their environment and are to some extent rational in their management by adopting farming practices that are environmentally friendly (Masocha and Kariage 2013). Nowadays, governments and international development

agencies recognize local level or native knowledge of agriculture, hence the present “back to farming” policy of the federal government of Nigeria. Anijah-Obi (2002) asserts that environmental sustainability has to do with good management, effective protection and proper use of environmental resources. To achieve these therefore, the people must imbibe the virtues of indigenous knowledge of agricultural practices.

There are different methods of imparting indigenous knowledge to people about environmental sustainability. However, since indigenous education does not have a curriculum and the content is neither documented nor organized in a logical sequence, the western world education knowledge of environmental management often dominates and over shadows the indigenous knowledge of the Africans about environmental sustainability. Allen (2007) is of the opinion that until the indigenous Africa knowledge about environmental sustainability is logically and sequentially documented in terms of curriculum development and the curriculum so developed is introduced to educational concerns and taught in schools at all tiers and levels of education as an approved programme of learning, like the social studies, for example, the value of indigenous agricultural knowledge and practices that enhance environmental sustainability and management will ever remain un-appreciated. The modern education (western education) would have gained a lot in knowledge about ways, means and methods of environmental sustainability but the indigenous people (educators) still retain their collective agricultural practices and peculiar knowledge and experiences which encourage environmental sustainability to themselves.

To the indigenous educators, the knowledge that they have about the environmental sustainability is derived from their sources of livelihood. It is sustained through their native agricultural practices. They believe that it is God who endows them with the knowledge about environmental sustainability through their religious worship. They identify their indigenous cultivation methods and skills as a powerful instrument for ensuring their environmental sustainability while it is God who designed their indigenous methods of learning environmental sustainability. Although, Allen (2007), stipulates that despite all the global environmental recession, the Nigerian environment is still better than that of the western world that is frequently ravaged by natural environmental disasters such as earthquake, wind and thunder storms. Rohana, Abdul and Dyhairuni (2007), postulate that indigenous education knowledge about environmental sustainability are fast disappearing and remain only in the memory of some old aged people who live in remote rural areas. Rohana, Abdul and Dyhairuni (2007) further opine that when these people pass away, indigenous education knowledge about environmental sustainability may be lost forever.

However, despite a hand full of literature in the area of environmental preservation, conservation and protection, no work has been done before now on environmental sustainability through indigenous education particularly in Southern Cross River State, Nigeria. Therefore, it is in the light of the prevailing circumstances and desired effort to contribute to the volume of knowledge and to bridge the gap in literature and knowledge that the researcher decided to embark on this research with the view to presenting empirical study on indigenous agricultural education and environmental sustainability in Southern Cross River State, Nigeria.

Land as a natural resource is a significant component of environment which Onweremadu, Asiabak, Adesope and Oguzor (2007) noted as a cherished resource for rural inhabitants. As stated by Onweremadu et al (2007), the indigenous agricultural practices are derived from indigenous education handed down from previous generations which gave the opportunity to determine whether a particular soil is fertile or not.

The hallmark of sustainable development which guarantees environmental sustainability as noted by Kolawole and Laogun (2005) is environmental sustainable management, protection and economic growth. To achieve these objectives, various stakeholders (e.g Agriculturists and Environmental Education) need to understand their environment and take advantage of same for the benefit of mankind. To meet up with the demand of this development, therefore, an in furtherance to the prevailing environmental conditions, modern, Agriculturists are left with no alternatives than to resort to ways and methods of overcoming apparent obstacles in ensuring continual soil fertility through indigenous education. Thus, "the underlying principles for sustainable development is to mimic the community environment and therefore capitalize on nature's own superior design for light and nutrient capture, pest control soil and water management" (Kolawole & Laogun, 2005), which is in line with the environmental sustainability principles.

Indigenous agricultural practices can be an excellent factor in environmental suitability. Pascual (2011), in his research on soil degradation and technical efficiency in shifting cultivation: the case study of Yucantan, Mrxico, clearly states that identifying technical inefficiency using indigenous knowledge is helpful to policy makers whose aim is to ensure sustainable agro-economic environment without affecting natural resources negatively. This is true in environment where indigenous agricultural practices are being carried out.

The reason is that indigenous agricultural practices (e.g shifting cultivation, bush fallowing forest preservation, periodic or seasonal fishing, fishing festival,) etc can help in vegetation regeneration and flora and fauna multiplication, thereby encouraging environmental sustainability. In the research, empirical analyses were conducted on the traditional cultivation technology and production efficiency, the result of the research showed that environment is capable of regenerating itself if indigenous knowledge is applied rather faster than the use of chemical.

Poly – culture for instance which is a norm in indigenous agricultural practices in most African Communities, this study area inclusive and other parts of the world which is an indigenous strategy for promoting diet diversities, income generation, production stability, minimization of risk, reduction in insect and diseases, efficient use of labour, intensification of production with limited resources and maximization of returns environmental friendliness under low levels of technology rest in the hands of agriculturists who follow indigenous agricultural practices (Warren 2008).

Research questions

The study sought to provide answers to the following questions:

1. What significant difference abound between indigenous education knowledge and environmental sustainability between primordial era and the contemporary society in Southern Cross River State?
2. What is the relationship between indigenous knowledge of agricultural practices and environmental sustainability of Southern Cross River State of Nigeria?

Statement of hypotheses

To achieve the purpose of this study and answer the research questions of this study, the following hypotheses were formulated to test the study.

1. There is no significant difference between indigenous education knowledge and environmental sustainability between 1990-2010 and 2010 to date.
2. Indigenous agricultural practices have no significant relationship with environmental sustainability in Southern Cross River State of Nigeria.

Population of the study

The population of this study consist all inhabitants in the seven Local Government Areas that make up the Southern Cross River State. From the National Population Commission (NPC) (2006) as projected up to 2014, the projected population of this areas is six hundred and twenty-three thousand two hundred and fifty-nine (623,259).

Sample

The sample size selected for this study was six hundred and twenty-three (623) respondents drawn from three (3) communities each of the three Local Government Areas. Akpabuyo Local Government Area – (Ikot Edem Odo, Akwa Ikot Effanga and Idebe Offiong Umo), Biase Local Government Area – (Ikot Anna, Umon and Abini), Odukpani Local Government Area –Ikot Effiong Otop, Ikot Okon Abasi and Ikot Eyo Okon), randomly selected for this study. The choice of 0.1% sample size is to enable the researcher sample a research population the researcher thinks is representative enough for which he can comfortably handle, (Isangedighi, 2013) and this was to avoid bias in sampling of respondents for the study. Table3.1 shows the proportionate sample across the selected L. G. As.

Research instrument

The instrument used for this study was questionnaire named indigenous agricultural education knowledge and environmental sustainability assessment scale (EVESAS). The thirty-two (32) item instrument was constructed by the researcher after review of some literature. His personal experience and shared experiences of others guided item statements. The instrument had two (2) parts of ‘A’ and ‘B’. Part ‘A’ solicited for bio-data of the respondents while part ‘B’ consists of indigenous agricultural education knowledge and environmental sustainability drawn from B1 to B5 respectively. BI: has to do with agricultural practices and environmental sustainability. It measures the various agricultural

practices from items 1-8 of the instruments. B2: Measures environmental sustainability which spans from items 9-16.

Research design

The design employed in conducting this research is the “Ex-post facto” design. This is because ex-post facto research design involves the collection of data to accurately and objectively describes existing phenomena (Isangeidihi 2013). Studies that make use of this design are employed to obtain a picture of the present condition of a particular phenomenon.

Procedures for data collection

To collect data for this study, the researcher had four (4) research assistants. In each research community the researcher first of all went and met the heads in Council, introduced himself and his assistants, explained their mission and solicited the council’s permission and cooperation to carry out research in their communities on days agreed by them. In some communities, subjects were administered on in the markets on market days, some in the town halls meetings, some in churches during church meeting while others during community sanitation exercise. In each case, the youth leader, women leader and town crier led the researcher and his team to meet with the people.

By and large, a total of six hundred and twenty-three (623) instruments were administered. At the end, due to mutilation and multiple responses, one hundred and forty-four (144, 23%) were rejected, while a total of four hundred and seventy-nine representing seventy-seven per cent (479, 77%) instruments were considered useful and was used for data analysis by the researcher for this study.

Procedure for data analysis

In analyzing the data, each hypothesis of the variables was identified, followed by the statistical tool employed. The data in both variables were analyzed using t-test and Pearson’s Product Moment Correlation (PPMC) analysis, at 0.05 level of significance

Test of differences

Before examining the relationship between indigenous education knowledge and environmental sustainability in Southern Cross River State, Nigeria, it became necessary to first of all determine if significant differences exist in the indigenous education agricultural practices as observed 20 years ago and now. Hence, the following hypothesis was tested.

Results

Hypothesis one

Ho: There is no significant difference in indigenous agricultural education and environmental sustainability before (1990 – 2010) and now (2010 - 2014) in Southern Cross River State.

H_1 : There is a significant difference in indigenous agricultural education and environmental sustainability before (1990–2010) and now (2010-2014) in Southern Cross River State.

To test this hypothesis Paired samples t-test was used for the analysis and result of the descriptive statistics and paired t-test is shown in Table 1 and Table 2 respectively

Table 1: Descriptive statistics for paired samples t- test

		Mean	N	Std. deviation	Std. Mean	Error
Pair 1	Agric. practices (before)	4.9896	479	.53406	.02440	
	Agric. practices (after)	3.0614	479	.86521	.03953	
Pair 2	Envt. sustainability (before)	4.3850	479	.73315	.03350	
	Envt. Sustainability (after)	2.8622	479	.73140	.03342	

Source: Author's statistical analysis (2015)

Table 2: Paired samples t-test result for hypothesis 1

Pair		Paired differences						Sig. (2- tailed)	
		Mean	Std. deviation	Std. Error	95 percent Confidence interval of the difference		T	df	
					Mean	Lower			
1	Agric. practices (before)	1.92812	.99987	.04569	1.83836	2.01789	43.205	478	.000**
	Agric. practices (after)								

** Differences significant at the 0.01 level

Source: Author's statistical analysis (2015)

The results from Table 1 indicate that there is a significant difference in agricultural practices 20 years ago and now, t (d.f.= 478) = 43.21, $p < 0.05$. The mean value in Table 2 indicates that respondents tend to have been involved in the measured agricultural practices 20 years ago than what is obtained now. Other measured variables show similar results.

From the foregone results, it was concluded that there is a significant difference in the indigenous agricultural education knowledge observed 20 years ago and now. Similarly, significant difference exists in environmental sustainability as observed 20 years ago and now in the Southern Cross River State, Nigeria. Hence the null hypothesis of no significant difference in indigenous education knowledge was rejected.

Hypothesis two

- Ho: Indigenous education knowledge of agricultural practices have no significant relationship with environmental sustainability in Southern Cross River State, Nigeria
- H₁: Indigenous education knowledge of agricultural practices have significant relationship with environmental sustainability in Southern Cross River State, Nigeria

Table 3: Pearson's Product Moment Correlation (PPMC) analysis for knowledge of agric practice, and environmental sustainability

		Agric practice	Environmental sustainability
Agric practices	Pearson Correlation	1	.758**
	Sig. (2-tailed)		.000
	N	958	958
Environmental sustainability	Pearson Correlation	.758**	1
	Sig. (2-tailed)	.000	
	N	958	958

**. Correlation is significant at the 0.01 level (2-tailed).

The result (Table 3) shows that there is a significant relationship between indigenous education knowledge of agricultural practices (X_1) and environmental sustainability (Y) in Southern Cross River State, Nigeria, with $r= 0.758$ and $p < 0.05$. The null hypothesis was consequently rejected. This means that indigenous education knowledge of agricultural practice has relationship with environmental sustainability. Hence, when indigenous agricultural practices increase, environmental sustainability increases. Therefore, indigenous agricultural practices should be sustained.

Discussion of findings

Hypothesis one

Indigenous education knowledge as obtained 20 years ago and presently

From the data presented in Table 1 and 2 and the results of the data analysis in the section, it was found out that indigenous education knowledge (agricultural practices), in the study area some 20 years ago is different from what is presently being practiced. The test of hypothesis 1 is presented in a null form (there is no significant difference in indigenous education knowledge as obtained 20 years ago and presently), the result indicates that there is significant difference between all measured variables. This finding was done using the paired samples t-test technique (before-and-after test) (Ho, 2006).

The findings disagree with the null hypothesis and so it rejected. It therefore can be concluded that indigenous agricultural education knowledge in the Southern Cross River State, Nigeria, has changed over time. This change is rather in the negative direction as

seen by the mean values found in Table 2. That is to say that 20 years ago, the level of indigenous knowledge of agricultural practices from, about and for the environmental sustainability were better applied than presently (Odumosu, 1990). This has brought about negative change on the environment in the Southern Cross River State, Nigeria.

Hypothesis two

Indigenous education knowledge of agricultural practices has no significant relationship with environmental sustainability in Southern Cross River State, Nigeria.

The finding from data analysis of hypothesis two indicated that there is a significant relationship between indigenous education knowledge of agricultural practices and environmental sustainability in Southern Cross River State, Nigeria. Hence, the null hypothesis is retained at 0.05 level of significance. This means that indigenous knowledge of agricultural practices have positive connotation with environmental sustainability of Southern Cross River State, Nigeria. Indigenous agricultural practices give a lot of allowance for regeneration of natural resources (e.g. medical herbs and plants). This agrees with the study by Masocha and Karioga (2003), that study was conducted to find out the value of indigenous knowledge in the field of herbal medicine in the Mutrikwi Communal area of Zimbabwe.

Conclusion

Based on the findings of this study, it is concluded that indigenous education and agricultural practices have changed in Southern Cross River State. This change has had negative impacts on environmental sustainability in the area. This is clearly evident in forest cover loss in the area within the period of study, which is very high.

Generally, as people get more involved in indigenous education agricultural practices, environmental sustainability increases and vice versa. However, indigenous education agricultural practices could only explain about 64 percent of the total variations in environmental sustainability. This means that other factors which were not measured, in this study contributed to the remaining percentage. Indigenous agricultural education practices therefore enhance environmental sustainability in Southern Cross River State, Nigeria.

Recommendations

Based on the findings of the study, the following recommendation is made:

1. The merits and demerits of indigenous agricultural practices should be examined by government, agriculturists the education and the people generally with the view of adopting the environmentally friendly practices and dropping the undesirable ones.

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