Wildlife Education Assessment in Public and Private Primary Schools for Sustainable Development: A Study in Ogun State Urban Area (Nigeria) and Central Region Area (Ghana)

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Abstract

The study aimed to know the level of wildlife knowledge among primary school student in Abeokuta north local government area, Ogun state Nigeria and Twifo-Hemang-Lower Denkyira district, central region, Ghana. A two steps sampling procedure was employed. The first involved stratifying the local government into north, east, south, west and central. Subsequently, schools were randomly sampled in each stratum. Five percent (5%) of the population of schools in Abeokuta north local government and Twifo-Hemang-Lower Denkyira district were sampled. Hence, 11 out of 216 private primary schools and 4 out of 86 were randomly sampled across the four strata. Primary data were collected using a structured questionnaire and a coloured photograph of ten common wild animal species in Nigerian zoos and Ghana's Kakum national park. Results were analyzed using descriptive statistics such as frequencies tables, mean and standard error. Comparison of responses between public and private schools was subjected to Principal Component Analysis (PCA). In the case of Nigeria, *Panthera leo* and *Canis aureus* were the most (99.54%) and least (14.54%) respectively identified and print wildlife in private primary schools while *Macaca sinica* and *Canis aureus* were the most (83.75%) and least (1.25%) respectively identified and print wildlife in public primary schools in the study areas.

In the case of Ghana, *Loxodonta cyclotis* (forest elephants), *Cephalophus silvicultor* (yello-backed duiker), *Tragelaphus eurycerus* (bongo) and *Cercopithecus diana* (diana monkey) were the most identified and seen in print wildlife in private primary schools and few public primary schools in the study area. Class (0.702) significantly influences animal type identified and animal type seen in print in public schools while gender (0.876) significantly influenced wildlife seen in print in private schools. These findings revealed that wildlife awareness is more in private schools than public ones and also the good proportion of public school pupils have never visited the zoo and are not being physically exposed to nature.

Introduction

This study assesses the level of wildlife knowledge among pupils in private and public primary schools in Abeokuta north local government Ogun state, Nigeria and Twefo-Heman-Lower-Denkyira district in the central region of Ghana. Children nowadays, particularly in urban areas, are more disconnected from nature than ever before, leading to a large-scale extinction of experience with the natural world, yet there are many potential benefits derivable from children interaction with nature first-hand, including *via* outdoor learning opportunities. Urban environmental education programmes typically aim to increase awareness and knowledge of local biodiversity and to promote positive attitudes and behaviour towards the environment [1].

Environmentally conscious activists in recent times have protested the exploitation of wild animals for human benefit or entertainment. Thus, the result of undesirable human activities, particularly the current deteriorating state of the global and local environment, has been hyping interest in environmental issues. Available literature has shown that today's human activities are empirical evidence of humans ruining what nature has bestowed to their care for sustainability [2]. Reported that man more than ever before is encroaching extensively upon what remains relatively wild all over the world. It was estimated that about 1% of the earth's recorded species of higher animals, that is birds and mammals had become extinct with humans being responsible for about 75% of such extinction. The modern man primarily is known for his high appetite for exploiting wild populations in the environment. More similarly, the rate of disappearance of entire species of plants and animals across the planet has been so high in the last few centuries. The exploitation of wild animals does not always lead to the extinction of the species in question, but the dramatic loss of entire species across the earth necessitates the review of the destruction of wild animals and their habitats [3].

Forests are being exploited and cleared and converted into croplands with intensified use. As various human activities exert pressures on the global environment, biological diversity declines as habitats are being transformed. Humanity is facing a wildlife crisis because of habitat and increasing demands of wildlife products. Since the year 1600, about 173 recorded species of birds and mammals, 654 species of plants and 191 species of molluscs have gone extinct. In Nigeria, for example, twenty-one of the known bird species are facing a serious threat of extinction or loss of habitat. The situation is worrisome as two of this species-Anambra waxbill and the Ibadan Malimbe exist only in Nigeria and nowhere else in the world. So also, with the increase in human population and cattle population for meat in most countries, there is continuous pressure exerted on forest resources causing fragmentation and degradation of wild animal habitats. Thus, the world's ecological relationships that have developed over several millennia of years is being shortened mainly through the activities of one exterminator species on earth, homo sapiens [4].

These human activities have been alerting world bodies such as the UN and its member countries to advocate for sustainable development

programs and goals to guard present resources to the satisfaction of the current generation and those yet unborn. Sustainable Development Goals (SDGs) of agenda 2030 have been divided into five main P themes; people, planet, prosperity, peace and partnership. Solar impulse foundation has about thousand (1000) solutions to climate change and for development to be sustained. Once advocates are conscious of sustaining the development to meet the needs of the present without compromising the abilities of future generations to meet their own needs, attention is drawn to the extinction of wildlife. As a result, there has been an increasing interest in conservation in the past few decades, mainly because of the decline of tropical forests and the loss of endangered species. However, the percentage of the earth area that has been set aside as protected areas is scarcely up to nine percent, while continuous pressure from various development and commercial activities is threatening to further reduce these areas [5].

More conspicuously in Ghana is the annual deer hunt festival known as Aboakyir literally meaning animal catch. The festival is one of Ghana's most significant traditional festival, which is celebrated every first Saturday in May by the Simpa people of Winneba in the central region. During the hunting, a live deer is captured from the wilds and brought to the chiefs and elders and the people for sacrifice. It is believed that the deer must be sacrificed to a smaller god, called Penkyi Otu, named after the place the Simpa people settled. Penkyi Otu is believed to help ward off evils and predict a good harvest. Sometimes the hunters strived to find a catch, but they would not sacrifice it, but release it into the wilds to have it hunted again the subsequent years. These actions are signs that the wild is becoming nearly threatened [6].

Coincidentally, this threatened wildlife is preserved in one of the national parks in Ghana, Kakum national park that is in the study district; Twefo-Hemang-Lower Denkyira district in the central region of Ghana. The national park covers an area of 375 square kilometres (145 sq ml) and appeared unique as it was a forest reserve established by the town folks in 1931. It was until 1992 when the state department of wildlife, which is responsible for wildlife preservation in Ghana took over the management and named it a national park (conversation with management of the park in May; Ghana news). Public primary schools within the district were Wawase District Assembly (DA) primary school, Twifo Hemang Roman Catholic district assembly basic school, Twifo Hemang methodist basic school, Somnyamekodur D A KG/primary school, Amebekyere DA basic school, Hemang RC DC basic school, Hemang Presby basic school. The research team also identified a private school named Emmanuel preparatory school. Information on wildlife was solicited from these pupils who identified and mentioned some of the printed endangered species of fauna called diana monkey, giant bongo antelope, yellow-backed duiker, African elephant, forest buffalo, civet and cats [7].

While some school pupils within the catchment areas could mention some wildlife in native languages with corresponding English/botanical names, other pupils could not identify their native names and couldn't match them with their botanical names. Among the fauna that could be identified in print by the pupils in the primary public schools included potto (*Perodicticus potto*), which in some English-speaking parts of Africa is called softly-softly. In the Kakum national park, a lot of the fauna wildlife are found and could also be in the tropical west and central Africa. The African palm civet is also spread in the Sub-saharan African region. Others included demidoff galago (*Galago demidoff*), forest elephant (*Loxodonta cyclotis*). The *Cephalophus silvicultor* (yello-backed duiker), *Tragelaphus eurycerus*

(bongo) and *Cercopithecus diana* (diana monkey) were the most identified and seen in print wildlife in private primary schools and few public primary schools in the study area in Ghana. *Panthera leo* could be identified physically in the mole national park in the northern part of Ghana. Though the pupils in Ghana and Nigeria could identify *Panthera leo* (lion) in print, the species are facing an extremely high risk of extinction in the wild and classified as endangered species [8].

Many nations, including Nigeria and Ghana, therefore, have evolved government agencies dedicated to wild animal conservation, which help to implement policies designed to protect them. Protected areas are established under the guidance of the International Union of Conservation of Nature (IUCN). More fundamentally, there is a contemporary climate change campaign because of the negative implications of human activities on the planet earth. Wildlife societies and clubs tend to imbibe in school pupils the good environmental activities and practices through education and association. For instance, the Wildlife Society Council (WSC) in Ghana, reiterated the relevance for educating the pupils who would contribute to achieving Sustainable Development Goals (SDGs). During their review of 30 years activities of wildlife clubs Ghana, the executive director of the Wildlife Society Council (WSC), observed that when environmental values are imbibed in children, they can stay with them throughout their lives, which would help in protecting and saving nature. Generally, school pupils are energetic and excited to observe wildlife, be it print or physical [9].

Materials and Methods

Study area

Abeokuta north is a local government area in Ogun state, Nigeria. Its headquarters are in the town of Akomoje, near Abeokuta. It has an area of 808 km^2 (312 sq mi) and a population of 201,329 at the 2006 census, more than 90% of the area is rural although more than 75% of the people live in the urban areas of the local government. The local government has 86 public primary schools and 216 private primary schools. The local government area includes the Oyan dam, an important source of water to the cities of Lagos and Abeokuta [10].

Field guide involving coloured photographs of ten (10) common wild animals in Nigerian zoos, pen, note pad, camera, GPS and questionnaire.

Method of data collection

Data were collected through the use of questionnaire and coloured photographs of ten common wildlife in Nigerian zoos. Pupils were asked to identify and mention the names of wildlife in photographs. Also, points will be awarded for having physically seen the wildlife. Stratified sampling was adopted for this study with respondent selected in proportion to the population in the study area; using a sampling frame of 280 respondents, 4 respondents per class and 20 respondent per school. A total of 280 questionnaires were administered in all [11].

Sampling procedure

A two steps sampling procedure was employed. The first involved stratifying the local government into north, east, south, west and central. Subsequently, schools were randomly sampled in each stratum. Five percent (5%) of the population of schools in Abeokuta

north local government were sampled in all (Table 1). Hence, 11 out of 216 private primary schools and 4 out of 86 were randomly sampled across the four strata. Four pupils (2 males and 2 females) were randomly chosen in each class (from primary one to five) in all the school sampled (Table 2).

Types of school	Total no of schools	Schools sampled (5% of total)
Private	216	11
Public	86	4

Table 1: Types, total and percentages of schools sampled in the study area.

Variables	Public		Private		Pooled		Mean/Mode
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	
Gender							
Male	40	50	110	50	150	50	-
Female	40	50	110	50	150	50	
Total	80	100	220	100	300	100	
Educational background							
Primary 1	16	20	44	20	60	20	-
Primary 2	16	20	44	20	60	20	
Primary 3	16	20	44	20	60	20	
Primary 4	16	20	44	20	60	20	
Primary 5	16	20	44	20	60	20	
Total	80	100	220	100	300	100	

Table 2: Gender and classes of respondents in the study area.

Data analysis

Results were analyzed using descriptive statistics such as frequencies tables, mean and standard error. Comparison of responses between public and private schools was subjected to Principal Component Analysis (PCA).

Results and Discussion

Demographic of the respondent

The demographics of pupils in public and private schools in Abeokuta north revealed the distribution of age in public schools. The majority 55% of the respondents were within the age range of 9 and 12 years, while 38.75% of the respondents were within the age range of 6 and 8 years old. The table also revealed the distribution of age in private schools [12]. The majority (56.82%) of the respondents were within the age range of 6 and 8 years, while 40.91% of the respondents were within 9 and 12 years old. None of the pupils falls within the age range of greater than 12 years in private school. This result shows that pupils in private schools are younger than their contemporaries in public schools (Table 3).

Variables	Public		Private		Pooled		Mean	Mode
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Age								
<6	3	3.75	5	2.27	8	2.66	8.85	8.06
6-8	31	38.75	125	56.82	156	52		
9-12	44	55	90	40.91	134	44.67		

>12	2	2.5	0	0	2	0.67	
Total	80	100	220	100	300	100	

Table 3: Demographics of the respondent.

Identification according to schools

The table below shows the statistics of both private and public school pupils who can identify, see in prints and seen physically. According to the study carried out privates such as Pinnacle group of schools, Adat nursery and primary school and Glorious kiddies have the highest number of students who can physically identify wildlife compared to their contemporaries in public schools such as OUS Ilugun Nur and Pry school, Ebenezer Anglican Nur and Pry school and Army children school [13]. This support the findings of McEwan who concludes that private schools are heterogeneous (discipline, extracurricular activities and other opportunities to interact with certain peer group) and offers student better quality education than public schools (Table 4).

Schools	Animal type	Male frequency (%)	Female frequency (%)
Success Foundation nur and pry (private)	Identified	58 (52.73)	47 (42.73)
	Seen print	92 (83.64)	83 (75.45)
	Seen physically	13 (11.82)	6 (5.45)
Abeokuta capital nur and pry (private)	Identified	65 (59.09)	62 (56.36)
	Seen print	90 (81.81)	80 (72.72)
	Seen physically	15 (13.63)	11 (10)
Dr Anjorin memorial (private)	Identified	70 (63.63)	73 (66.36)
	Seen print	93 (84.55)	88 (80)
	Seen physically	36 (32.73)	31 (28.18)
Faithful children (private)	Identified	56 (50.90)	48 (43.64)
	Seen print	88 (80)	81 (73.64)
	Seen physically	27 (24.55)	26 (23.64)
Pinnacle group of schools (private)	Identified	60 (54.55)	68(61.82)
	Seen print	96 (87.27)	86 (78.18)
	Seen physically	41 (37.27)	37 (33.64)
Masaba nur and pry (private)	Identified	65 (59.09)	54 (49.09)
	Seen print	65 (65)	55 (50)
	Seen physically	41 (37.27)	9 (8.18)
Glorious kiddies (private)	Identified	72 (72)	77(70)
	Seen print	73 (66.36)	77 (70)
	Seen physically	36 (32.72)	35 (31.81)
Living stone (private)	Identified	85 (77.27)	82 (74.55)
	Seen print	110 (100)	109 (99.09)
	Seen physically	24 (21.82)	32(29.09)
Adat Nur and pry sch (private)	Identified	75 (68.18)	76(69.09)
	Seen print	82 (74.55)	72 (65.45)
	Seen physically	43 (39.09)	33 (30)

Clemford (private)	Identified	65 (59.09)	58 (52.72)
	Seen print	90 (81.82)	82 (74.55)
	Seen physically	33 (30)	25 (22.72)
OUS Ilugun Elega (public)	Identified	51 (46.36)	47 (42.72)
	Seen print	85 (77.27)	84 (76.36)
	Seen physically	17 (15.45)	7 (6.36)
Ebenezer Anglican (public)	Identified	60 (54.55)	53 (48.18)
	Seen print	77 (70)	85 (77.27)
	Seen physically	14 (12.73)	15 (13.64)
Army children school 3 (public)	Identified	54 (49.09)	45 (40.91)
	Seen print	83 (75.45)	75 (68.18)
	Seen physically	10 (9.09)	11 (10)
Muslim nur and pry school (public)	Identified	50 (45.45)	47 (42.72)
	Seen print	80 (72.73)	80 (72.72)
	Seen physically	11 (10)	8 (7.37)

Table 4: Identification according to schools.

Comparison between private and public in percentage

Panthera leo and *Canis aureus* were the most (99.54%) and least (14.54%) respectively identified wildlife in private schools while *Macaca sinica* and *Canis aureus* were the most (83.75%) and least (1.25%) respectively identified wildlife in public primary schools in the study areas. *Panthera leo* and *Canis aureus* were the most (99.08%) and least (50.45%) respectively seen in print wildlife in private schools while *Macaca sinica* and *Canis aureus* were the most (98.75%) and least (37.50%) respectively seen in print wildlife in public primary schools in the study areas.

Macaca sinica and *Panthera tigris* were the most (60.45%) and least (0.00%) respectively seen physically wildlife in private schools while *Macaca sinica* and *Panthera tigris*, *Acinonyx jubatus*, *Canis aureus* were the most (42.50%) and the least (0.00%) respectively seen physically tropical wildlife in public Primary schools in the study areas. From the comparison above, the percentage of pupils that can identify animals in private schools are more than those in public schools. Same can be said of physically seen animals as a more significant percentage of the private school pupils have seen the animals physically when compared with their counterparts in the public schools. However, there are no much differences between public and private school pupils about animals seen in print. Previous research by Marrott supports this finding that most wildlife species identified by pupils were through print (Table 5).

Animal type	Animals identified in percentage (%)		Animals seen in print in percentage (%)		Animals seen physically in percentage (%)	
	Private	Public	Private	Public	Private	Public
Panthera leo	99.54	87.5	99.08	96.25	34.09	3.72
Terrapene cardina	55.45	63.75	87.72	92.5	31.36	22.5
Panthera tigris	90.45	76.25	92.72	92.5	0	0
Acinonyx jubatus	39.54	6.25	73.17	62.5	2.27	0
Papio anubis	40.91	26.25	85.45	86.25	21.82	5
Macaca sinica	94.54	93.75	93.17	98.75	60.45	42.5
Aldabrachelys gigantean	93.63	87.5	94.08	96.25	41.36	32.5

Struthio camelus	48.18	15	84.08	58.75	27.72	5.5
Canis aureus	14.54	1.25	50.45	37.5	5.91	0
Gorilla gorilla	48.63	37.5	88.17	88.75	19.09	1.25

Table 5: Comparison between private and public in percentage.

Comparison of responses in public and private schools using PCA

Hotelling, revealed that factors that produce two variables in PCA are statistically reliable. Factor 1 contribute 73% of all factors that explained information in terms of identification of the animal type. Hence in factor 1 Class (0.702) significantly influences animal type identified and animal type seen in print in public schools. Factor 1 explained 36.39% with a contribution of 73% through the alpha validity (Table 6).

Components	Factor 1	Factor 2
Age	0.399	0.666*
Gender	-0.319	0.607*
Class	0.702*	0.454
Animal type identified	0.814*	0.159
Animal type seen print	0.761*	0.379
Animal type seen physically	0.434	0.064
Eigen value	2.183	1.191
%Variance	36.39	19.85
Cronbach's alpha	0.73	0.068

Table 6: Principal Component Factor (PCA) analysis of awareness of wildlife education in public schools.

Factor II explained 19.85% with a contribution of 68% through the alpha validity. All these factors explained 56.24% of the variance of sampled school pupils. Factor 11 has two items with a low contribution. Age (0.838) and class (0.915) significantly influenced the type of wildlife identified in private schools.

In Table 7, Factor 1 have almost 50% contribution and indicate that the pupils were aware of wildlife education. Nearly all of them that can identify can also see in print. Therefore, all the factors are statistically reliable. Factor 1 explained 39.91% with a contribution of 77% through alpha validity. Factor II explained 20.02% with a contribution of 16%. All the two factors explained 59.93% of the variance of sampled school pupils in private schools.

All the factors showed high contributions. These contributions confirmed that the pupils are aware of wildlife education. In factor II, however, gender (0.876) significantly influenced the types of wildlife seen physically in private schools, which means it usually influences their level of wildlife education. This support the findings of Espelage and Swearer, which expressed that boys tend to be more active physically than girls and by the same token more restless if they must sit for an extended period. Similarly, male pupils tend to identify wildlife in print and could further mention their names. These exciting school pupils could also describe the delicacy of game meat since they usually hunt with their male parents in the bushes.

Components	Factor 1	Factor 2
Age	0.838	0
Gender	0.11	0.876
Class	0.915	0.001
Animal type identified	0.731	0.162
Animal type seen print	0.337	0.226
Animal type seen physically	0.442	0.598
Eigen value	2.395	1.201
%Variance	39.91	20.02
Cronbach's alpha	0.77	0.16

Table 7: Principal Component Factor (PCA) analysis of awareness of wildlife education in private schools.

Conclusion

Majority of the pupils in primary schools can identify wildlife and have seen wildlife in print, but very few of them have seen the animals physically. There are indications that wildlife awareness is more in private schools than in public ones. These findings revealed that a good proportion of primary school pupils have never visited a zoo and are not being exposed to nature. Their wildlife education is almost entirely theoretical and too little practical. Their awareness is on the use of the wildlife-fauna as game meat and flora as vegetables and herbs for medicinal purposes.

Based on the result and conclusion from this study, the following recommendations are suggested: Pupils should be exposed to wildlife species in primary schools through books and ecological tours. Extensive education is needed to create awareness on opportunities, ecological and economic benefits of sustainable wildlife utilization and eco-tourism. In addition, incorporating the study of wild animals and plants in primary schools curriculum and getting the pupils familiar with it will help them to appreciate nature and subsequently enhance conservation.

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