

Enhancing Nature Education Research for Environmental Sustainability in Nigeria



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Abstract

Nature Education is vital for enhancing climate resilience, preserving biodiversity and achieving environmental sustainability in Nigeria. This study identifies the numerous benefits of nature and how nature can be factored in development planning for sustainable environment in Nigeria. This study further gives information about the usefulness and importance of nature education research to our educational system as a means towards enhancing climate resilience, preserving biodiversity and achieving environmental sustainability in Nigeria. This study further identified that poetry can be innovatively employed in nature education and be used to enhance nature based solutions towards enhancing climate resilience in Nigeria. This study concluded by the clarion call for in-depth nature education research towards enhancing climate resilience for environmental sustainability in Nigeria.

Keywords: Biodiversity; Climate Change; Environment; Nature Education; Research; Sustainability

Introduction

Climate change is one of the global issues which we must tackle with alacrity in order to prevent global warming from becoming too unbearable for the survival of mankind. The impacts of climate change are being felt globally even in the developing countries like Nigeria [1]. Climate change affects individual species and the way they interact with other organisms and their habitats, which alters the structure and functions of ecosystems and the goods and services that natural systems provide to society. Understanding the direction and magnitude of ecological responses caused by climate change allows human communities to better anticipate these changes and adapt as necessary [2]. Climate change has a major effect on the availability of numerous earthly resources, especially water that supports the life of the earth [3]. As humans put increasing pressure on the planet, using and consuming more resources than ever before, we risk upsetting the balance of ecosystems and losing biodiversity [4].

Nature education is identified through this study as very vital to enable individuals, communities and institutions in Nigeria and beyond to understand the role of biodiversity preservation in

enhancing climate resilience in Nigeria. The concept of biodiversity has provoked considerable debate and misunderstanding among the public, decision-makers, and even the scientific community. Much has been published on the subject since its first appearance at the National Forum on Biodiversity in September 1986, the proceedings of which became the best-seller "Biodiversity" [5]. But what is biodiversity, what threatens it, why is it important, and what are ecologists doing to better understand it? Biodiversity is all the different kinds of life you'll find in one area-the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world. Each of these species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life [4]. Biodiversity supports everything in nature that we need to survive food, clean water, medicine, and shelter [4].

Biodiversity includes all organisms, species, and populations; the genetic variation among these; and all their complex assemblages of communities and ecosystems. It also refers to the inter-relatedness of genes, species, and ecosystems and their

interactions with the environment [5]. Biodiversity protection and maintenance are important for the elimination of poverty and sustainable development [3]. Biodiversity preservation is also important for enhancing climate resilience in Nigeria. Biodiversity is important both to climate change mitigation and adaptation by its supportive ecosystem services. Researchers identified Nature education as vital in every community, city, campus and company in Nigeria to help us appreciate the beauty and wonders of nature as well as the role nature plays in enhancing climate resilience for environmental sustainability. Nature education further enables us to see how best to preserve our biodiversity and ecological systems. In this study, we shall closely examine the role of nature education research in enhancing climate resilience in Nigeria.

Methodology

This paper examined current progress with “the role of nature education research in enhancing climate resilience in Nigeria” through existing literature review and data collection from relevant agencies. The main purpose of this research work was to survey theoretical backgrounds and previous studies on “Enhancing nature education research for environmental sustainability in Nigeria” and the current progress with the implementation of these strategies in Nigeria.

What is Nature Education?

A nature-based learning experience provides an understanding and appreciation of the natural environment, knowledge of how systems interlink and how we affect our surroundings. By spending time in the environment using, it to play and learn affects us at a deep level. It is this connection with nature that opens us up to care more for the environment as adults [6]. Nature education can further be defined as the education that enhances the knowledge of nature, its beauty and bliss, and how best to preserve it for future generations thereby achieving environmental sustainability. Poetry has been identified as one of the innovative tools which can be used to teach about nature and how it can be preserved for environmental sustainability in Nigeria [7,8]. The most successful way of promoting swift improvements required for human populations to respond to future climate change is by maintaining biological diversity on all levels, from genes to biomes [3]. Intrinsically dependent on the environment are biodiversity and biodiversity based ecosystem resources. Climate change faced substantial environmental threats to biodiversity in the twentieth century, with a rise in effects as climate change progresses and could even intensify. Over the past 400 years, the exponential rise in human repercussions on the natural climate has prompted scientist to identify a new age in the geological history of the Planet-the Anthropocene phase [9] Climate change worsens the impact of other stressors on nature and our wellbeing. Humans have overfished the oceans, cleared forests, polluted our water sources, and created a climate crisis. These actions are impacting biodiversity around the world, from the most remote locales to our own backyards. Even the most

important biodiversity hubs around the world are not immune from human pressures. Education has been identified to lead to healthier bodies, healthier minds, healthier environment and healthier future [6]. Nature education research involves advances in research-based and scholarly understanding of nature education and the role it plays in achieving environmental sustainability.

The Therapeutic and Psychological Benefits of Nature

The overall activity of human existence, which includes the foods we eat, the air we breathe, the water we drink and the climate around us that makes our planet habitable all come from nature. It is estimated that marine plants produce more than half of our atmosphere’s oxygen, and a mature tree cleans our air, absorbing 22 kilos of carbon dioxide, releasing oxygen in exchange. Even chemical medicines are based on nature and 100% of our food comes from nature. However, Human actions, including deforestation, encroachment on wildlife habitats, pollution, intensified agriculture, and acceleration of climate change, has caused great harm to nature. It is estimated that humanity has altered about 75% of the earth’s ice-free surface, about 420 million hectares of forest has been lost since 1992 and nearly 1 million species face extinction. That is to say that we are responsible for the ongoing threat or biodiversity crisis in our world and the power to stop resting in our hands and actions towards nature [8,10] identified that nature can benefit one’s mental health in the following ways:

- i. Improve your mood.
- ii. Reduce feelings of stress or anger.
- iii. Help you take time out and feel more relaxed.
- iv. Improve your physical health.
- v. Improve your confidence and self-esteem.
- vi. Help you be more active.
- vii. Help you meet and get to know new people.
- viii. Connect you to your local community.

The Ecological Interaction Between Climate Change and Biodiversity in Nigeria

There is an established dynamic interaction between climate change and biodiversity (nature). Climate change is as a result of natural factors and or human activities. When this occurs, it completely alters biodiversity(nature), agricultural production, food security, and the ecosystem. This has resulted in the migration, extinction and possibly death of endemic species of fauna and flora. The impact of climate change on biodiversity cannot be over-emphasized [11]. Biodiversity reacts in diverse forms in response to a changing climate. However, changes in climatic conditions differ between continental and oceanic environments as well as

the effects will differ greatly between different species of plants and animals [12]. Climate change is already having an impact on biodiversity and is projected to become a progressively more significant threat in the coming decades [11]. The importance of biodiversity as a nation's natural resource is enormous because of the specific services they provide and needs they satisfy.

Ecosystems play an important role in climate change adaptation processes, since some of the services they provide may reduce the impacts of extreme events and disturbance, such as wildfires, floods, and droughts. This role is important in regions vulnerable to climate change such as the African continent, whose adaptation capacity is limited by many geographic and socio-economic constraints [13]. Biodiversity indicates abundance of life and its support systems. This is important in countries with increasing population like Nigeria. Biodiversity helps in maintaining the functions of the ecosystem. Nigeria is rich in species diversity and biological resources. Biodiversity and human wellbeing in Nigeria are inseparable. The uniqueness of nutritional support from biodiversity in Nigeria lies in the broad-based ecosystem diversity across the length and breadth of Nigeria: from the south to the north and from the east to the west of the country [14]. Nigerians appreciate biodiversity in different ways. The nation's biodiversity constitutes the source of food, raw materials, wide range of goods and services and genetic materials for agriculture, medicines and health-care support, domestic and commercial products, aesthetics and cultural values. This biodiversity also provides ecosystem services that improve the value and knowledge about life. The value of biodiversity to Nigerians is closely linked to the wide range of the various ecosystems found in areas such as Guinea, Sahel, and Sudan Savanna which are rich in wildlife and timber product, Niger delta with diverse sea food sources, southern Nigerian with rainforest belt, providing a huge base for food resources among others [14].

The USAID Report on Biodiversity and Tropical Forestry Assessment [15] reveals that there are numerous environmental threats in Nigeria affecting biodiversity. Nigeria's climate has been changing, evidence is seen in increased temperature and rainfall, rise in sea level, flooding, drought, desertification, land degradation and loss of biodiversity amongst others. Some of the plant and animal species in Nigeria are threatened to extinction and degradation resulting from the changing climate. Biodiversity in Nigeria is under the threat of extinction from climate change, other land use practices and economic development. According to the IUCN Red list of 2013, Nigeria has a total of 309 threatened species in the following taxonomic categories: Mammals (26), Birds (19), Reptiles (8), Amphibians (13), Fishes (60), Mollusks (1), other Invertebrates (14) and Plants (168) [16]. Changes in the structure and function of given ecosystems, usually from biodiversity degradation and loss can reduce the availability of these vital services and affect aesthetic, ethical and cultural values of human societies. Natural resource scarcity for livelihood

support resulting from climate change is evident in many local communities in Nigeria. Biodiversity in Nigeria has been greatly impacted upon by climate change with resultant decline in specie population as they are unable to adapt to the constant change in climatic conditions, hence an increase in biodiversity loss. Areas that were once rich in species diversity and services for life support systems are faced with losses. The interaction between organisms and their local environment has been tampered with, reducing survival and reproduction and posing serious challenge in the distributions of species across geographic regions in the country.

Poetry as a Valuable Tool for Enhancing Nature Education Research in Nigeria

Poetry is a valuable tool for climate change education for sustainable development in Nigeria [17]. Poetry has been discovered as a valuable tool for nature education and can be innovatively used as well to promote nature education research in Nigeria. Poetry is beauty and beauty attracts [17]. Through poetry we can express the beauty and wonders of nature in a pleasant manner thereby helping to achieve environmental sustainability. This poem "Time for nature" advanced by the Benjy Poetry and Music Global Concepts further buttresses this point.

Case Study One: Poem "Time for Nature" By Benjamin Anabaraonye

Nature's voice spurns a rebirth.
Nature's choice is clean and green.
Feel and enjoy her sweet scent.
It's a beautiful world we live in.
Nature's voice calls for hope and health.
Nature's choice is peace and progress.
Our heritage of wits and wealth
Nature's gift to be judiciously harnessed.
It is time for nature to be nurtured.
Nature is a precious gift from Divine.
A precious gift to be treasured.
Time for nature! It is time!
Nature's voice calls for caution and care.
Nature's choice is relish and cherish.
Both plants, animals and humans are dear.
Refuse to be foolish and selfish.
Nature's voice we surely can hear.

Nature's choice is beauty and grandeur.

The health of the planet is our desire.

It is time! Time for nature! [7]

Case study two: Poem "Time for Nature" Review by Barr. James Hope

Benjamin Anabaraonye's poem is a wakeup call towards awareness to restoring our vital natural habitats. The poet simply personified nature as a personality with good intentions for human existence [18]. The good intention of nature is so rounded with exceptional qualities which will better the world and human existence if carefully preserved, nurtured, harnessed and protected. Let's look at the authors poetic techniques:

Theme: the theme of the work is centered on the importance of harnessing and protecting the gift of nature.

Tone: The tone of the writer is explanatory, approving, and demanding.

Mood: The writer's mood is inviting, candid, urging, emotional and very passionate about the subject matter.

Imagery: Imageries were also used, such as Plant and animals create a virtual image, "sweet scent"

Style: The poem contains five stanzas with each stanza having an end rhyme of ABAB except the last stanza which rhymed differently with AABB. The poet exhibited a style of capitalizing each beginning line.

Techniques:

The use of Repetition "Time for Nature."

The use of Conjunction "beauty and grandeur" plants and animal."

The use of personification "natures voice spurns a rebirth."

The use of Assonance "relish and cherish."

Nature indeed has no other time than now for everyone to focus his time and energy towards ensuring the preservation of it. Many countries of the world today have taken the initiative of restoring nature's lost habitats. Benjamin Anabaraonye's poem is a meaningful contribution to this great task. The awareness is presented through the usage of simple language to ensure that both the young and old, educated and uneducated, lovers of poetry and non-lovers of poetry who come across this work will be able to understand the demand to preserve natures heritage. When we all find a bit of our time by caring for the environment in our everyday life and affairs, we will contribute greatly to saving and preserving the world's great environmental potential [8].

Recommendations

The impact of climate change is greatly felt on soil fertility in Nigeria [2] and on biodiversity which affects the sustainable development and economic growth of the nation. Most of the forest reserves established by the Nigerian government for conservation of forest resources have been seriously neglected and underdeveloped in terms of investment and management [19]. The need for conservation of biodiversity in Nigeria in response to changing climate is very urgent. This entails a sustainable use of available natural resources in order not to jeopardize the ability of the future generations to enjoy the services brought about by biodiversity. Establishment of several forest and game reserves across the country by the government is recommended. In addition, international conventions and treaties entered and signed by the Nigerian government for the preservation of biodiversity should be followed with immediate implementation.

Conclusion

Nature education research is valuable to our educational system as a means towards enhancing climate resilience, preserving biodiversity and achieving environmental sustainability in Nigeria. The impacts of climate change are expected to exacerbate the impacts of human pressure on biodiversity. There is therefore a great need for nature education to enhance climate resilience for environmental sustainability in Nigeria. Nature education research should therefore be enhanced in Nigeria through the award of grants by the federal government and other multilateral organizations such as the World Bank Group to researchers to enable them to do deeper work to unravel more innovative ways through which nature education can be used to enhance climate resilience for environmental sustainability in Nigeria.

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