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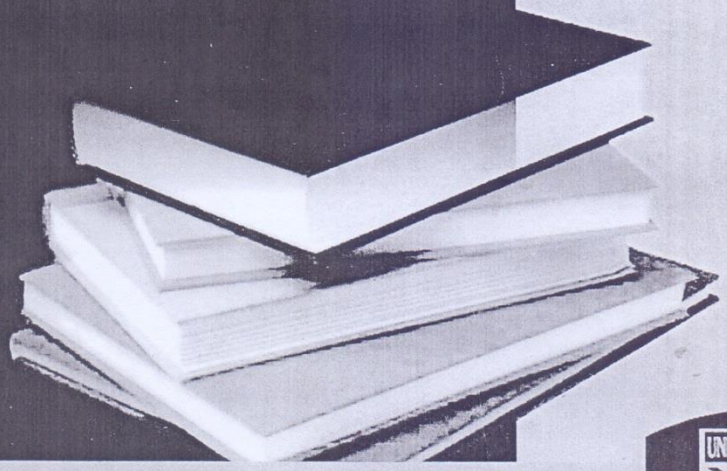

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P.M.B. 1515,
ILORIN, NIGERIA.

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FOREWORD

This special edition of the Journal of Curriculum and Instruction (JCI) is a profound initiative of the Department of Science Education, University of Ilorin to honour me in recognition of my outstanding contributions to teaching, research and community development over the last four decades of service to the University. As I write this foreword, it again gives me great delight and pleasure to realize that my journey as an academic is winding up to a desired and fulfilled end, and this is by reason of mandatory retirement age of 70 years. I am particularly grateful to God, whose support, sustenance, unquantifiable help and mercies has brought me this far in all my academic journeys from the position of a graduate assistant to a full-fledged professor of science education.

This edition of JCI draw articles from several topical issues in science education, some of which align with my research interest. Other article(s) on entrepreneurship education, teachers' assessment preference in the wake of geometrical increase of students at school and sustainable development goals are quite relevant to science education, and broadly to teacher education. While the results of these studies are largely quantitative, further research that uses qualitative methods (*e.g.*, case study, ethnography, grounded theory) to collect other sources of data will support robust data interpretation that can be translated into meaningful educational policy decisions and curriculum innovations for classroom practice.

As I read through the articles and reflected on the experiences I have garnered in writings and getting published, I fondly realize that academic writing is a craft, and like any other craft, it must be learned. It is on this note that I would like to commend and encourage contributors to this edition of JCI and other academics to keep making writing a top priority in their daily routine. By this means, writing skills are honed towards an academic writing that is clear, concise and pleasing to your readers.

Again, let me appreciate all the authors who have contributed to this special edition of Journal of Curriculum and Instruction. Their willingness and commitment to academic writings made it possible to achieve this selection of pieces of research for this special issue. Warm thanks to the reviewers of the articles who provided valuable comments and suggestions. Special thanks also go to the Head of Department and Editor-in-Chief, Dr. Ganiyu Bello, the Managing Editor, Prof. Esther Ore Omosewo who coordinated and ensured this special issue becomes a reality. Finally, I thank the entire Editorial Board for putting all the articles together as a special issue in my honour.

I recommend this journal to all teaching practitioners, science and teacher educators for teaching, learning and research purposes as the results of research presented herein can inform classroom practice and future research.

Professor Adekunle Solomon Olorundare
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Note for Contributors

The Department of Science Education, University of Ilorin, Nigeria, journal titled Journal of Curriculum and Instruction publish papers that report results of research, as well as descriptive, interpretative and persuasive articles related to curriculum and instruction which includes:

a) Curriculum theory and practice;
b) Instructional theory and practice;
c) Educational technology and
d) Subject methodology.

The journal is published biannually, which constitute two annual issue in one volume.

Guidelines for Authors

1. Articles should not exceed 15 pages (including references and appendices) in length. They must be typewritten, double-spaced on A4 size sheets. Ample margin should be provided.
2. Each article should be prepared by an abstract of not more than 200 words.
3. The title of the paper, the author's name and address, should accompany each article on a separate page for proper identification and recognition.
4. Footnotes are not acceptable except on the front page where they may be used to identify the author(s) or the article.
5. The editorial board of the Journal of Curriculum and Instruction adopts the APA format 6th edition, as a guide for preparing a journal article.
   a. Table and figures should be as few as possible. All figures should be camera ready.
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Fafunwa, B. A (1972). The purpose of teacher education. In A. Aderalegbe (Ed). A Philosophy for Nigerian education (pp. 22-33). Lagos: Heinemann Education Books.

Journal Articles

Ajayi-Dopemu, Y. (1985). Effect of visual illustration on students learning. Africa Journal Research in Education, 1(1). 126-130.

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Oni, E. B. (1985). Proposing a learning resources centre: A model for secondary schools in Kwara State. Unpublished PhD thesis. University of Ilorin, Ilorin, Nigeria.

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6. All submitted manuscripts are reviewed by the journal's assessors who make recommendations about the paper's suitability for publication. However, manuscripts that do not conform to the journal guidelines will be returned to the author without review.
7. Three copies of manuscript for publication plus processing fee and correspondence on editorial matters should be sent to:

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MANAGING NATURAL RESOURCES FOR EMPOWERMENT AS A MEANS OF SUSTAINABLE DEVELOPMENT IN NIGERIA

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Abstract

The paper focuses on the involvement of natural resources as an ecosystem that can sustain man as a means of empowerment for human livelihood and national development. Different examples of natural resources and how Nigeria citizens could be empowered with the management of the natural resources was discussed. It was recommended that every Nigeria citizen should be educated on how to manage the national resources in their environment. They should equally be trained on how to create and apply knowledge gained to address specific needs of a particular community within Nigeria. Also, government, scientists and science educators should organize capacity building programmes that would introduce scientific reflective thinking and materials on natural resources management at all levels of education in the country.

Keywords: Natural Resources, Ecological Systems, Management and Sustainability

INTRODUCTION

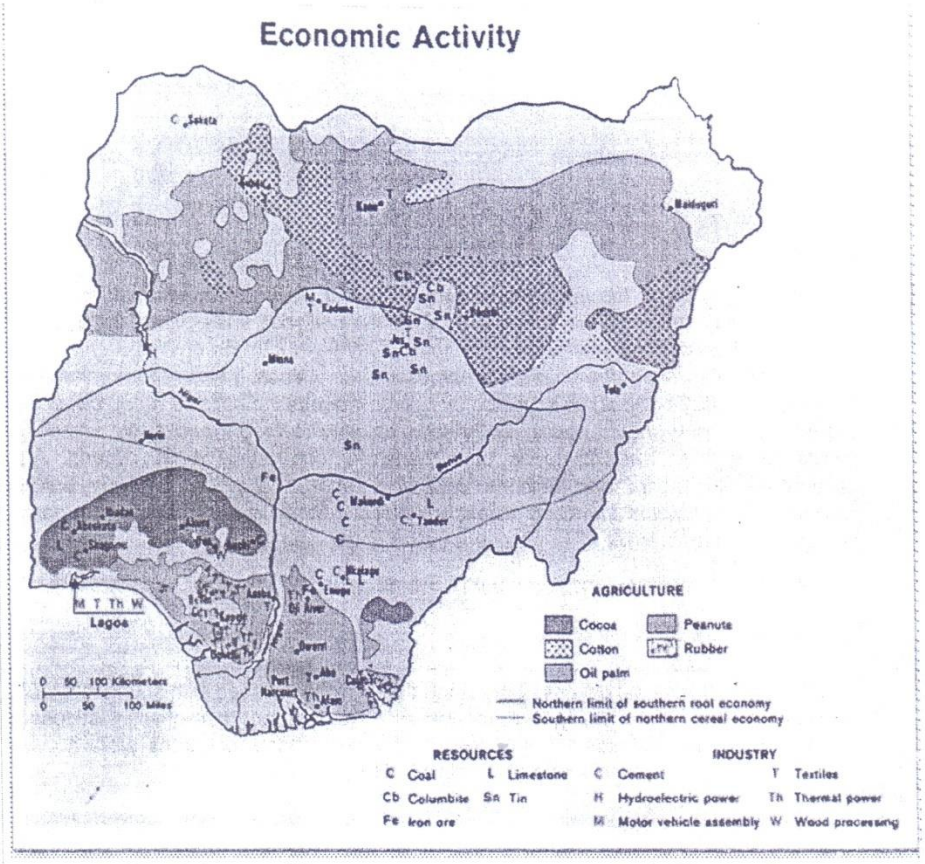
Nigeria is one of the best nations of the world that is highly blessed with abundant natural resources, yet, due to illiteracy, mismanagement, wastage and non-challant attitude of Nigeria citizens on the usefulness of these resources, these resources were not well managed for country development (Fatunbarin, 2006).

The resources that are supposed to be utilized and managed well either through entrepreneurship education or other means for sustainable development are mostly wasted. Hence, this is the reason why the problems of poverty, unemployment, overdependence on foreign goods and technology are pre-dominant in the country and this is highly contributing to low economic growth rate and under development of this nation. Hence in this study, attempts are made to describe different types of natural resources that are found in this country, their benefits as well as how they could be managed through entrepreneurship for human live hood as well as for national development.

According to Omono (2015), the venturesafrica.com reported that in the 2015 report, Nigeria lost about ₦50 trillion from untapped resources. There are natural resources like coal, columbite, limestone and tin that are capable of making the federal government's

plan into reality. In that report, Nigeria's president, Muhammad Buhari recently shared his administrational plans to implement economy diversification policies to decrease dependence on the oil and gas section in 2016.

The map below show the economic activities in different mineral, agricultural and industrial resources in Nigeria.



SOURCE; adapted from venturesafrica.com(2015)

Table 1: Types of Natural Resources in each State in Nigeria

S/N	STATES	NATURAL RESOURCES
1	Abia	Gold, Lead/Zinc, Limestone, Oil/Gas & Salt
2	Abuja	Cassiterite, Clay, Dolomite, Gold, Lead/Zinc, Marble & Tantalite
3	Adamawa	Bentonite, Gypsium, Kaolin &Magnesite
4	Akwalbom	Clay, Lead/Zinc, Lignite, Limestone, Oil/Gas, Salt & Uranium
5	Anambra	Clay, Glass-Sand, Gypsium, Iron-ore, Lead/Zinc, Lignite, Limestone, Phosphate & Salt, Oil/Gas
6	Bauchi	Gold, Cassiterite (tine ore), Columbite, Gypsium, Wolfram, Coal, Limestone, Lignite, Iron-ore & Clay
7	Bayelsa	Clay, Gypsium, Lead/Zinc, Lignite, Limestone, Maganese, Oil/Gas & Uranium
8	Benue	Barite, Clay, Coal, Gemstone, Gypsium, Iron-Ore, Lead/Zinc, Limestone, Marble & Salt
9	Borno	Bentonite, Clay, Diatomite, Gypsium, Hydro-carbon, Kaolin & Limestone
10	Delta	Clay, Glass-sand, Gypsium, Iron-ore, Kaolin, Lignite, Marble & Oil/Gas
11	Ebonyi	Gold, Lead/Zinc & Salt
12	Edo	Bitumen, Clay Dolomite, Phosphate, Glass-sand, Gold, Gypsium,Iron-ore, Lignite, Limestone, Marble & Oil/Gas
13	Ekiti	Feldspar, Granite, Kaolin, Syenite&Tatium
14	Enugu	Coal, Lead/Zinc & Limestone
15	Gombe	Gemstone &Gypsium
16	Imo	Gypsium, Lead/Zinc, Lignite, Limestone, Marcasite, Oil/Gas, Phosphate & Salt
17	Cross River	Barite, Lead/Zinc, Lignite, Limestone, Manganese, Oil/Gas, Salt & Uranium
18	Jigawa	Butyles
19	Kaduna	Amethyst, Aqua Marine, Asbestos, Clay, Flosper, Gemstone, Gold, Graphite, Kaolin, Hyanite, Mica, Rock Crystal, Ruby, Sapphire, Sihnite, Superntinite, Tentalime, Topaz & Tourmaline
20	Kano	Gassiterite, Copper, Gemstone, Glass-sand, Lead/Zinc, Pyrochinre& Tantalite
21	Kastina	Kaolin, Marble & Salt

S/N	STATES	NATURAL RESOURCES
22	Kebbi	Gold
23	Kogi	Cole, Dolomite, Feldspar, Gypsium, Iron-ore, Kaolin, Marble, Talc & Tantalite
24	Kwara	Cassiterite, Columbite, Feldspar, Gold, Iron-ore, Marble, Mica & Tantalite
25	Lagos	Bitumen, Clay & Glass-sand, Oil/Gas
26	Nasarawa	Amethyst (Topaz Garnet), Barytex, Barite, Cassirite, Chalcopyrite, Clay, Columbite, Coking Coal, Dolomite/Marble, Feldspar, Galena, Iron-ore, Limstone, Mica, Salt, Sapphire, Talc, Tantalite, Tourmaline Quartz &Zireon
27	Niger	Gold, Lead/Zinc & Talc
28	Ogun	Bitumen, Clay, Feldspar, Gemstone, Kaolin, Limestone & Phosphate
29	Ondo	Bitumen, Clay, Coal, Dimension Stones, Feldspar, Gemstone, Glass-Sand, Granite, Gypsium, Kaolin, Limestone & Oil/Gas
30	Osun	Columbite, Gold, Granite, Talc, Tantalite & Tourmaline
31	Oyo	Aqua Marine, Cassiterite, Clay, Dolomite, Gemstone, Gold, Kaolin, Marble, Silimonite, Talc & Tantalite
32	Plateau	Barite, Bauxite, Betonite, Bismuth, Cassiterite, Clay, Coal, Emeral, Fluoride, Gemstone, Granite, Iron-ore, Kaolin, Lead/Zinc, Marble, Molybdenite, Phrochlore, Salt, Tantalite/Columbite, Tin & Wolfram
33	Rivers	Clay, Glass-Sand, Lignite, Marble & Oil/Gas
34	Sokoto	Clay, Flakes, Gold, Granite, Gypsium, Kaolin, Laterite, Limestone, Phosphate, Potash, Silica Sand & Salt
35	Taraba	Lead/Zinc, Kaolin

S/N	STATES	NATURAL RESOURCES
36	Yobe	Soda Ash &Tintomite
37	Zamfara	Coal, Cotton & Gold

SOURCE; http://nigerianfinder.com

Statement of the Problem

Nigeria is blessed with abundant natural resources but standard of living of Nigeria citizen shows that it's citizen are living from hand to mouth. (Nigerian Finder © 2017). With entrepreneurship education, natural resources in Nigeria communities could be managed well to alleviate poverty and even unemployment.

The benefits of natural resources that Nigeria is blessed with are too enormous to the extent that there is no state in Nigeria that is not blessed with any resources. Yet, only certain mineral resources are over exploits, if others are managed well and utilise with entrepreneurship education, then sustainability of the country could be enhanced.

The stakeholders in education do not lay much emphases on how natural resources within each Nigeria communities could be tapped and exploit for sustainable development, though if any, they are few.

Benefits of the natural resources

The under listed benefits of natural resources are actually for the benefit of the people that constitute the population of Nigeria. These benefits according to Fatunbarin (2006) are:

Aesthetic value: Game reserves, zoological gardens parks and sanctuaries, botanical gardens, arboretum and water falls, rock formations, rolling hills and alluring vegetation, are all places of aesthetic value, which can attract tourists.

Economic benefits: Examples of these are food, revenue, souvenir and trade items.

Educational benefits: Natural forests and game reserves are useful in population studies and studies on animal behavior and autecological studies. Paper, and important educational material, is got from some plants.

Electricity transmission: Electric poles are made from certain suitable tree species such as teak (*Tectona grandis*).

Medicinal value: Drugs and dressings are got from many plants and animals.

Provision of clothing: Cotton from plants provide materials form making clothes

Provision of shelter: Natural forests, savanna woodlands and grasslands, soils and water bodies provide natural habitats for many living organisms. They also contribute materials for producing houses for man and his domestic animals and fishes in aquaculture.

Recreational value: Many natural resources are useful in such sports as sport fishing, sport hunting, boating, swimming, regatta, polo and horse racing.

Sources of energy: Petroleum oil and natural gas, wood, coal and charcoal, hydroelectricity, solar energy, are among many sources of energy from the natural resources.

Transportation: Water provides waterways. Materials from forest trees are also used for building boats, canoes and ships and in the building of lorries and sleepers for railways.

Management of Natural Resources for National Development

The effective management of the resources for the benefit of mankind are very important. All those activities of man that make possible the discovery of the resources, evaluating them to ascertain their state, abundance and quality, exploiting them, refining them, marketing them and upgrading their quality and make their benefits realizable among other activities, constitute development of the material resources. All these can be managed through the activities outlined below:

Water and water resources

Development of the water body for different uses such as domestic consumption, animal consumption, sewage and waste disposal, crop production, fish production, industrial uses, power generation, transportation, recreation and tourism.

Construction of dams on water bodies to impound them.

Fixing of suitable gadgets on water bodies for irrigation.

Fixing of suitable gadgets and equipment on water bodies for power generation.

Building of jetties on the shores and banks of water bodies for easy berthing of boats, canoes and ships

Building of water treatment plants near water bodies to purify the water for domestic and industrial consumption.

Land resources

Development of lands for different uses such as agriculture, industries, commercial purposes, residential, places of beauty and aesthetic value.

Reclaiming of lands

Conservation of lands

Soil resources

Development of soils for different uses such as crop farming, block making and pottery

Classifying the soils before putting them into different uses

Reclaiming soils before putting them into different uses

Controlling wind erosion hazards in the soils

Upgrading the fertility of soils through crop rotation, ... cultivation

Protecting soils from misuse and mismanagement

D. Forest resources

i. Developing forests and forest resources for uses such as timber, ... for paper, production of certain drugs, natural habitat of wildlife, ... woods

ii. Establishing forest plantations of fast growing indigenous and ...

iii. Protecting forests from fires, arbitrary felling of trees and other forms of human interference and wood-destroying agents such as insects and fungi

iv. Researching into different aspects of forest tree production, protection, improvement and utilization

E. Wildlife conservation

i. Developing wildlife for such uses as food in the form of meat, eggs and milk, recreational purposes in sport hunting and sport fishing; aesthetic value when they are kept in zoological gardens, game reserves, parks and sanctuaries; educational value, souvenir and trade, items and source of revenue

ii. Developing wildlife by obtaining detailed inventory of their locations, sizes, richness in fauna and their management needs

iii. Developing wildlife by constituting their habitat into game reserves and protecting these by law.

iv. Setting up management bodies to be in charge of the game reserves

Taking steps to ensure the multiplication of rare species possibly in captivity

Providing attractive and well maintained facilities for tourists

Enriching the game reserves through the introduction of new species

Setting up parks and zoological gardens in cities and towns for encouraging tourism

F. Mineral resources

i. Developing mineral resources for uses such as fabrication of equipment, ... for industrial processes, raw materials for fertilizers, sources of ..., such as equipment and chemicals, construction works, pottery, ..., materials, pharmaceutical products, military hardware and for tarring roads (... bitumen)

ii. Investigating the mineral resources through detailed geological ... locations, abundance, quality ... their conservation needs

iii. Protecting these minerals through legislation

iv. Effecting repairs to their localities to make accessibility to them easy

v. supervising the exploration of the minerals

G. Atmosphere

i. Developing the atmosphere for numerous uses

ii. Protecting the atmosphere through effectively enforced legislation from pollution, introduction of poisonous gases, introduction of gases that damage the ozone layer and introduction of chemicals and activities which warm up the atmosphere

Encouraging measures that will help in replenishing the oxygen of the atmosphere. One such measure is afforestation. Entrepreneurship is one the measures embraced by the government to reduce mass poverty and unemployment in the country.

Natural Resources and Entrepreneurship Education

Entrepreneurship is one the measures embraced by the government to reduce mass poverty and unemployment in the country. Entrepreneurship education entails philosophy of self-reliance such as creating a new cultural and productive environment, Ogundele, Akingbade and Akinlabi (2012). Ogundele (2007) that the promotion and development of entrepreneurial activities would aid the dispersal and diversification of economic activities and induce even development in a country. Similarly, Osuagwu (2002) equally suggested that with entrepreneurial development in Nigeria, increase in the rate of economic growth, creation of job opportunities, reduction on reliance on importation of manufactured goods and decrease in the trade deficits that result from such imports would be enhanced

Literature Review

According to European Environmental Agency, (2005), human wealth is based on the use and consumption of natural resources including materials, energy and land which constitute part of the ecosystem Hence, with continue use of these resources with the related environmental influence, ecological crises and security threats on the ecosystem could occur.

Ogundele, Akingbade and Akinlabi (2012) researched on entrepreneurship training and education as strategic tools for poverty alleviation in Nigeria. A stratified random sampling technique was used on 250 entrepreneurs and apprenticeships form five local government areas in Lagos State. Simple Regression Analysis was used to test the relationship between entrepreneurship training, education and poverty alleviation. The results showed that correlation existed between entrepreneurship training and education of Nigeria citizens. It was then recommended that effective technical education, youth empowerment and social welfare service are catalyst for poverty alleviation. Therefore, using natural resources for entrepreneurship purpose could sustain man for live hood and assist in national development.

Conclusion and Recommendations

Using all means to exploit the natural resources effectively within communities of different school setting through entrepreneurship education would make Nigeria citizen to be more productive and as a result will increase the economic rate of the country as well as helping each individual to be self-reliant

Also, embarking in entrepreneurial activities with the vast natural resources in Nigeria communities could be an important tool for attaining sustainable development

Acquisition of entrepreneurial skill by Nigeria citizen for effective utilization of natural resources could serve as a way of empowering both teachers and students thus contributing to productivity level of development required for a sustainable economy.

Every Nigeria citizen should be educated on how to manage the national resources in their environment. They should equally be trained on how to create and apply knowledge gained to address specific needs of a particular community within Nigeria.

Furthermore, appropriate policy and well managed entrepreneurship education should be promoted by Nigeria government to alleviate her citizens from poverty and over dependence on foreign materials and technology that could be produced locally

The National Universities Commission (NUC), the Teaching Service Commission (TESCOM) and Primary Education Authorities (PEA) and Universal Basic Education (UBE) in this country should lay more emphasis on how natural resources within each community could be managed effectively at various levels of education for a better Nigeria.

Also, school-based enterprises that would make use of natural resources in the school environment should be introduced. This could students identify their potential business and create ideas that may evenvually assist them in livelihood as well as for sustainable development of this country.

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